

**Transhumanism and Theological Ethics: An Investigation of Insights to be Gained from Past Developments in Chemical Therapeutics**

Submitted by Stephen Goundrey-Smith to the University of Exeter as a thesis for the degree of Doctor of Philosophy in Theology, January 2021

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Signature

A rectangular box containing a handwritten signature in black ink. The signature is cursive and appears to read 'Stephen Goundrey-Smith'.

## **Abstract**

Transhumanism is concerned with developing human life beyond its current form and limitations using biomedical technologies. The purpose of this project is to make a theological and ethical assessment of proposed transhumanist enhancement technologies, in the light of developments in chemical therapeutics that have already taken place, during the so-called “therapeutic revolution” years of the twentieth century (1950-1990). The key research question that will be addressed is: what can be learned from theological and ethical engagement with past therapeutic developments, and how does this learning inform an evaluation of proposed future transhumanist biomedical technologies within Christian theological ethics?

In this project, a case study methodology is used to examine two areas of past therapeutic development, the contraceptive pill and selective serotonin reuptake inhibitor (SSRI) antidepressants. The historical context and theological implications of these therapeutic developments are explored, and they are assessed against standard criteria for transhumanist developments. The findings from the case studies are then applied to proposed future transhumanist technologies, to determine how past experiences of therapeutic developments might inform ethical evaluation of future proposals in transhumanist technologies, and how issues with previous therapeutic developments might be reconsidered in the light of this evaluation.

The thesis will be structured as follows: a) introduction and development of the research question, discussion of the methodology used and the assumptions made, b) description of transhumanist objectives and technologies and a theological and ethical critique of these, in order to develop theologically-informed criteria of what constitutes a transhumanist technology, c) presentation of two case studies of previous therapeutic developments (the contraceptive pill and SSRI anti-depressants) and evaluation of these cases against the criteria for transhumanist technologies, d) discussion of these findings, and their implications for a revised ethical understanding of future transhumanist technologies.

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## **Chapter 1 - Biomedical Science – Past & Future**

### 1.1. Introduction

The practice of medicine has always been of fundamental importance in the relief of human suffering, the promotion of wellbeing for all people and the provision of humanitarian aid in areas of endemic illness and natural disaster.

Modern science and technology has led to the development of increasingly specific and sophisticated interventions and techniques in medicine, with the potential to have a profound impact on human health outcomes. This has been seen clearly in the field of pharmacology and chemical therapeutics where, since the mid-twentieth century, there has been a so-called “therapeutic revolution”, an exponential increase in the number of drug molecules available to health services for the treatment of diseases.<sup>1</sup> The availability of a wider range of drugs, with increasingly specific modes of action has, in turn, enabled more sophisticated medical treatment in different clinical specialties.

In recent years, the concept of transhumanism has developed. In brief, transhumanism may be described as the use of biomedical technologies not just to heal disease, but to enhance human life and experience beyond current expected human function. Forms of enhancement are already available, and have been for some time – for example, the use of caffeinated drinks to improve mental alertness. However, the radical nature of proposed future transhumanist biomedical technologies means they have the potential to provide significant enhancements to human function, longevity and cognitive abilities that were not previously available, and these may have profound effects on the shape of human life. I shall explore definitions of transhumanism in more detail in the next chapter, but note for now that Nicholas Bostrom, a prominent transhumanist, has defined transhumanism as “an interdisciplinary approach to understanding and evaluating the opportunities for enhancing the human condition that are emerging through advancing technology.”<sup>2</sup> Many of the

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<sup>1</sup> Richard Weinshilboum, “The Therapeutic Revolution”, *Clinical Pharmacology and Therapeutics*, 42 (1987), pp. 481-484.

<sup>2</sup> Nicholas Bostrom, “Transhumanist Values”, *Journal of Philosophical Research*, 30 (2005), p. 3.

technologies proposed by transhumanists are either not yet scientifically feasible, or not scalable for widespread routine use, but would have a significant impact on human life if they were.

The purpose of this thesis is to assess proposed transhumanist enhancement technologies from the standpoint of Christian theological ethics, taking into account the developments in chemical therapeutics that have already taken place, during the so-called “therapeutic revolution” years of the twentieth century, which I shall define as 1950-1990. The objective of the thesis is to determine what can be learned from theological ethical engagement with past therapeutic developments, and how this learning informs an ethical evaluation of proposed future transhumanist biomedical technologies.

The specific research questions that will be addressed in this thesis are:

- 1) What are the various issues of theological ethics presented by transhumanist developments?
- 2) To what extent were past therapeutic developments transhumanist technologies in their time, in the same way as proposed future technologies?
- 3) What were the ethical concerns with past therapeutic developments? Have these ethical concerns been warranted in the light of subsequent experience?
- 4) How do issues identified with previous therapeutic developments inform the evaluation of future biomedical technologies? On the one hand, there may be some new and unexpected issues with transhumanist biomedical developments; on the other, ethical concerns identified in relation to past therapeutic developments may have proved unfounded or be less relevant when considering future biomedical technologies.

The thesis will address these questions by reviewing the transhumanism movement (accounting for its diversity and variation) and the theological and ethical criticisms of transhumanism. The thesis will then propose detailed criteria with which to evaluate biomedical technologies – both general criteria for what constitutes a transhumanist technology, and theological ethical criteria for evaluating these technologies from a Christian ethical standpoint. The criteria



will be then applied to two cases of past pharmaceutical development – the oral contraceptive pill and SSRI antidepressants – to determine whether these past developments could be regarded as having been transhumanist in their time, what ethical issues were debated at the time of their introduction, and how consideration of those issues has shifted during their use. The ethical issues associated with transhumanist technologies will then be reassessed in the light of the findings from the case studies, which will in turn be used to further refine the criteria for a transhumanist technology. The implications for medical ethics and Christian pastoral care will then be discussed. The detailed structure of the thesis is described in the next section.

## 1.2. Thesis Outline & Structure

The thesis is structured in six chapters, which will describe the scientific and historical background to both transhumanism and the twentieth century “therapeutic revolution”, discuss the transhumanism movement and theological issues arising from it, present two case studies from twentieth century chemical therapeutics, and then apply the ethical findings from these case studies to the consideration of proposed future transhumanist technologies.

This chapter, Chapter 1, will introduce the background of the project, and will describe the development of modern pharmacology, during the years of the so-called “therapeutic revolution”. It will discuss the impact of the therapeutic revolution on human life and society, in terms of medical and healthcare benefits. The chapter will also describe the historical context of the ethical questions being discussed, by reviewing the history of medical ethics. In the latter part of the chapter, the scope, assumptions and limitations of the study will be described, and the methodology will be discussed in detail – including the use of case studies, the rationale for the cases chosen, and the use and importance of criteria. The wider implications of the research for medical ethics and pastoral care will be briefly discussed.

Chapter 2 will explore in detail the objectives, history and claims of the transhumanist movement. It will examine and critique the various philosophical influences on transhumanism and the approaches taken by different protagonists of transhumanism. This will enable a taxonomy of the

transhumanist movement to be developed, so that its diversity can be understood, and common features explored. The chapter will describe three basic classifications of transhumanist scholarship: a) *philosophical transhumanists*, such as Max More and Nick Bostrom, who see transhumanism as a life philosophy; b) *technological transhumanists*, such as Ray Kurzweil and Hans Moravec, who see transhumanism from the perspective of the effects of technology (computing, artificial intelligence or cybernetics) on human life, and the benefits that it can bring; and c) *ideological transhumanists*, such as Katherine Hayles and Donna Haraway, who explore the effects of biomedical technology on human society, but in a way that is neutral to technology per se, and which primarily sees these technologies as tools for exploring cultural and ideological issues. The chapter will then describe briefly the main transhumanist technologies that have been proposed and describe major theological and ethical critiques of these technologies.

The chapter will then specify two sets of criteria – a) general criteria by which a biomedical technology might be classified as a transhumanist technology, derived from the transhumanism literature, and b) specific criteria by which Christian ethicists might evaluate a transhumanist technology as permissible or desirable. These specific criteria are derived from the work of Neil Messer and Elaine Graham.<sup>3</sup> There will then be a preliminary discussion about how proposed technologies which can be classified as transhumanist should be evaluated against the general and specific criteria. These two sets of criteria will then be used to assess the two case studies of previous therapeutic developments which took place during the “therapeutic revolution” years (1950-1990) - the contraceptive pill and SSRI antidepressants.

Chapter 3 will present the first of these two case studies of previous therapeutic developments, the development of the oral contraceptive pill, which was

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<sup>3</sup> Neil Messer, *Selfish Genes and Christian Ethics: Theological and Ethical Reflections on Evolutionary Biology* (London: SCM, 2007), pp. 229-235; Elaine Graham, “In Whose Image? Representations of Technology and the Ends of Humanity” in *Future Perfect? God, Medicine and Human Identity*, edited by Celia Deane-Drummond and Peter Manley Scott (London: T and T Clark International, 2006), pp. 56-69.

introduced in 1960. The first section of the chapter will describe the history of the oral contraceptive pill, discussing the events that led to its introduction, and the actions of the protagonists involved. The second section will discuss the effects of the pill on the lives of women and men, on marriage, and on society and will discuss the Roman Catholic Church's theological and ethical concerns with the pill. Finally, the contraceptive pill will be evaluated against the three sets of criteria for transhumanist technologies developed in Chapter 2, to determine the extent to which, in its time, the pill could have been regarded as a transhumanist development, and to evaluate it from the perspective of theological concerns about transhumanist technologies. This will be compared with ethical responses to the pill (or the prospect of a contraceptive pill) at the time, and with contemporary ethical responses to the pill.

Chapter 4 will present the second of these two case studies – the development of selective serotonin reuptake inhibitor (SSRI) antidepressants (for example, Prozac), which took place in the late 1980s. As with the previous chapter, the first section will describe the history of SSRI development. It will describe how SSRIs arose from previous developments in rational psychopharmacology, discussing the events that led to their introduction, and the actions of the protagonists involved. The second section will describe and evaluate the effects of SSRIs on society – their therapeutic effect on patients with clinical depression and their use as mood-altering drugs in individuals who are not depressed (the so-called “Prozac phenomenon”) – and discuss theological and ethical responses to SSRIs, examining in detail the work of Roman Catholic scholar, John-Mark Miravalle.<sup>4</sup> Miravalle's work, the most significant in this area, is a discussion of how depression fits into an understanding of human attributes based on the psychology of Thomas Aquinas and of the ethical goods of treating depression, and a natural law-based ethical critique of excessive use and over-reliance on antidepressant drugs. In the same way as the previous chapter, the third section of the chapter will then assess SSRI antidepressants against the three sets of criteria for transhumanist technologies developed in

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<sup>4</sup> John-Mark Miravalle, *The Drug, The Soul and God: A Catholic Moral Perspective on Antidepressants* (Chicago: University of Scranton Press, 2010).

Chapter 2, to determine the extent to which, in their time, they could have been regarded as a transhumanist development, and to evaluate them from the perspective of theological concerns about transhumanist technologies. This will be compared with ethical responses to SSRIs of the time, and with contemporary ethical responses to SSRIs.

Chapter 5 will reconsider some current transhumanist proposals and technologies, in the light of previous experience with chemical therapeutics, as outlined in the two case studies presented in Chapters 3 and 4. The chapter will begin by summarising the findings of the case studies according to the criteria and determining the issues in theological ethics that have arisen through the development and clinical use of these medicines, which are relevant to a Christian response to transhumanist technologies. The chapter will then begin to answer the research questions of this thesis. In terms of the first question, the various issues of theological ethics presented by transhumanist technologies, the discussion will focus on four specific domains – autonomy, nature/natural law, embodiment and the *imago Dei* – which I will show are points of contact between past biomedical technologies and potential future transhumanist technologies. The extent to which the contraceptive pill and SSRI antidepressants were, in their time, transhumanist technologies and their ethical implications will be evaluated, according to the criteria in Chapter 2. There will be a discussion about the ethical issues of these past therapeutic technologies, and whether the ethical concerns identified when they were introduced have proved to be of concern with long term experience. A response from Christian theological ethics to future transhumanist biomedical technologies will then be assessed, in the light of the ethical findings with previous medical technologies, and this reassessment will be used to further refine the criteria for transhumanist technologies used in this thesis.

Chapter 6 will then draw general conclusions. Transhumanist technologies are often seen either optimistically, as a panacea for all human suffering, or pessimistically, as the gateway to a dystopian future. Based on theological and ethical reflection on past therapeutic developments, using objective criteria, this project will demonstrate that the reality is somewhere in between. With both modern medicine to date and proposed future transhumanist technologies,

scientists and practitioners are motivated by the alleviation of suffering, the improvement of human experience and the promotion of human flourishing, and these motivations are consistent with Christian ethics. However, the development of biomedical enhancement technologies, like all science, takes place within a social and cultural context and this affects how the technologies are evaluated by Christians, from a theological and ethical perspective. This project will show that the church should neither accept new biomedical enhancement technologies uncritically, nor respond with a knee-jerk rejection of such technologies. Instead, a nuanced Christian ethical critique of such technologies is required, based on the areas identified in this thesis, namely autonomy, nature, embodiment and the *imago Dei*. In the light of experience with the contraceptive pill and SSRI antidepressants, an ethical evaluation of biomedical technology based largely on natural law, as has happened previously, will no longer be sufficient to ensure an accurate assessment of future, radical biomedical technologies. The concluding chapter will highlight possible further areas for research in the theological ethical evaluation of transhumanism and will end with a discussion of the practical implications of the research for medical ethics and for Christian pastoral care.

The next section of this first chapter provides the context for the project, by describing the development of modern pharmacology, and its impact on human life and flourishing.

### 1.3. Development & Impact of Modern Pharmacology

This section discusses the development of the modern science-based pharmaceutical industry, describes some of its major therapeutic achievements, and analyses their impact on human mortality and quality of life in the twentieth century. Also, in this section, a definition of the so-called “therapeutic revolution” is given, in terms of the period of history that it describes.

Modern pharmacological medicine has developed during the twentieth century, because of three main factors. First, during the late nineteenth and early twentieth century, the understanding of, and technological capability in, the molecular sciences increased considerably. Second, since the beginning of the twentieth century, the pharmaceutical industry has become increasingly socially

and academically respectable in both the United Kingdom (UK) and the United States (US) and this has led to its development as a commercial enterprise. Third, pharmacological medicine has developed to address unmet medical needs, particularly during and after the two world wars in the twentieth century.

The history of the expansion of the manufacturing pharmaceutical industry in Britain during the twentieth century is described in detail by Judy Slinn.<sup>5</sup> In the Victorian era, in both the US and UK, most medicines were manufactured by individual pharmacists (dispensing chemists) in their pharmacies, who primarily sold their medicines directly to the public. Furthermore, many of the medicines available were made of crude plant or animal extracts, and were of limited efficacy and often dubious quality. Many were produced according to a proprietary formula (“secret recipe”) of the pharmacist’s choice. Consequently, during the nineteenth century, many of the medicines available were of variable formulation and there was little information available on these medicines, other than that compiled for advertising purposes.

However, various scientific and socio-political factors converged to stimulate the development of pharmaceutical manufacturing as an industry, in the early part of the twentieth century.

These included:

- The development of important new therapies in the early twentieth century from German medicinal chemistry research, which was dominant at the time. These new medicines included the local anaesthetic, procaine, the barbiturate sedatives and the arsenic compound for syphilis, Salvarsan.<sup>6</sup> Moreover, the First World War cut off the supply of German pharmaceuticals to the Allied countries, and this stimulated pharmaceutical research in Britain and the United States.<sup>7</sup>

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<sup>5</sup> Judy Slinn, “The Development of the Pharmaceutical Industry” in *Making Medicines: A Brief History of Pharmacy and Pharmaceuticals* edited by Stuart Anderson (London: Pharmaceutical Press, 2005), pp. 155-174.

<sup>6</sup> Slinn, “The Development of the Pharmaceutical Industry”, p. 162.

<sup>7</sup> Slinn, “The Development of the Pharmaceutical Industry”, pp. 165-166.

- The gradual acceptance of commercial pharmaceutical manufacturing as a respectable area of activity for the scientific academy in the early twentieth century. Tansey maintains that a key factor in this was the expansion of animal experimentation into commercial organisations.<sup>8</sup> In the nineteenth century, only academic research laboratories - hospital, university and medical college laboratories - were licensed for animal experimentation. However, in 1901, after a lengthy political and professional campaign, the Wellcome Physiological Research Laboratories were granted formal registration for animal experimentation under the 1871 Cruelty to Animals legislation.<sup>9</sup> This was a watershed for the research-based commercial pharmaceutical industry in Britain, and led the way for other pharmaceutical companies to apply for licenses to conduct animal experiments in their own laboratories. This in turn enabled them to attract highly-qualified research staff from academia and ensured further investment in pharmaceutical research.<sup>10</sup> Acceptability of drug research to the academic community and indeed to wider society is an important factor in drug development, as will be seen in the first case study in this thesis, on oral contraception, in Chapter 3.
- The professionalism in pharmaceutical manufacturing and sales that was advocated – and demonstrated - by Henry Wellcome, of Burroughs Wellcome, and others during the early years of the twentieth century.<sup>11</sup> The Burroughs Wellcome pharmaceutical company coined the term “ethical” in their advertising and promotional material, to describe their medicines that they promoted to the medical professional, as distinct from “patent” medicines, sold directly to the public.<sup>12</sup> Burroughs Wellcome sought to manufacture high quality products, and promote

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<sup>8</sup> Tilli Tansey, "Pills, profits and propriety: the early pharmaceutical industry in Britain", *Pharmaceutical History (London)*, 25 (1995), p. 6.

<sup>9</sup> Tansey, "Pills, profits and propriety", p. 6.

<sup>10</sup> Tansey, "Pills, profits and propriety", p. 6

<sup>11</sup> Tansey, "Pills, profits and propriety", p. 3.

<sup>12</sup> Tilli Tansey, "Medicines and men: Burroughs Wellcome and Co and the British Drug Industry before the Second World War", *Journal of the Royal Society of Medicine*, 95 (2002), p. 411.

them to the medical profession in an “ethical” manner. They therefore employed trained pharmacists as company representatives, produced regular mailings to the medical profession, and received copies of major medical journals such as the British Medical Journal and the Lancet in order to keep up to date with the latest medical developments.<sup>13</sup>

In the early years of the twentieth century, chemical synthesis and chemical extraction techniques were limited, and many of the early pharmaceutical therapies were of biological origin. Experiments conducted in the nineteenth century had demonstrated that particular organs, such as the ovaries and testes, could exert an effect on the whole body, and this could only be explained as a result of chemicals secreted by those organs into the bloodstream. In 1905, Baylis and Starling coined the term “hormone” for these chemical secretions (from the Greek *hormaō*, meaning “I excite”).<sup>14</sup> Medical scientists began to see the wider potential of hormonal therapy - for example, to manage menopausal symptoms and improve quality of life, not just to treat disease. In 1910, Arnold Lorand published a book entitled “Old Age Deferred”, proposing the use of ovarian extracts to treat menopausal symptoms.<sup>15</sup> Another important development in this area was the isolation of insulin from animal pancreatic secretions by Banting and Best at the University of Toronto in 1921-1922.<sup>16</sup> This enabled the treatment of diabetes mellitus, a disease for which there had previously been no effective treatment.

In the late nineteenth and early twentieth century, there was increasing mass production of vaccines. In Germany in 1890, Behring and colleagues had discovered that animals immunised against diphtheria and tetanus produced antitoxins, which could be extracted and used as a component of a vaccine.<sup>17</sup>

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<sup>13</sup> Tansey, “Pills, profits and propriety”, p. 3.

<sup>14</sup> Davis S.R., Dinatale I, Rivera Wall L and Davison S, “Postmenopausal Hormone Therapy: From Monkey Glands to Transdermal Patches”, *Journal of Endocrinology*, 185 (2005), pp. 207-222.

<sup>15</sup> Robert Jutte, *Contraception: A History*, translated by V. Russell (Cambridge: Polity Press, 2008), p. 288.

<sup>16</sup> Robert Simoni, Robert Hill and Martha Vaughan, “The discovery of insulin: the work of Frederick Banting and Charles Best”, *Journal of Biological Chemistry*, 277 (2002), pp. 31-33.

<sup>17</sup> Tansey, “Medicines and men”, p. 412.



Consequently, by the early twentieth century, Burroughs Wellcome were producing diphtheria vaccine using horse serum, at their laboratories in south London.<sup>18</sup>

Occasionally, natural products research yielded unlooked-for benefits. In 1904, Burroughs Wellcome recruited Henry Dale, an academic pharmacologist, to conduct a research project on ergot of rye, a fungal overgrowth on grain, which had marked effects on the human body when ingested.<sup>19</sup> As the research progressed, Dale and his team found that ergot of rye was what has been described as "a treasure house of drugs", and contained not just one but several therapeutically significant substances, including acetylcholine, histamine and tyramine. This opened research avenues to discover a range of modern therapeutic substances - for example, the antihistamines, ergotamine, for migraines, and ergometrine, an obstetric vasoconstrictor.

After the Second World War, however, there was a considerable expansion of pharmaceutical research, during which many new drugs were developed, an era known as the "therapeutic revolution". The term "therapeutic revolution", to describe the period of post-war pharmaceutical industry expansion, was coined in retrospect in 1987 by an American clinical pharmacologist, Richard Weinshilboum, in a review of the various drug discovery advances by the pharmaceutical industry during the previous half-century.<sup>20</sup> It should be noted, however, that the term was used by Rosenberg in 1977 to describe the development of medicine as a whole from the beginning of the nineteenth century,<sup>21</sup> and by Reekie and Weber in 1979 to describe the development of the pharmaceutical industry since 1935.<sup>22</sup> However, Weinshilboum's definition is

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<sup>18</sup> The production of vaccines from animal sera in the late nineteenth and early twentieth century represented a major shift in methodology in pharmaceutical manufacturing. A similar shift may take place in the twenty-first century in response to the COVID-19 crisis.

<sup>19</sup> Tansey, "Pills, profits and propriety", p. 7.

<sup>20</sup> Weinshilboum, "The Therapeutic Revolution", pp. 481-484.

<sup>21</sup> Charles Rosenberg, "The Therapeutic Revolution: Medicine, Meaning and Social Change in Nineteenth Century America", *Perspectives in Biology and Medicine* 20 (1977), pp. 485-506.

<sup>22</sup> W. Duncan Reekie and Michael Weber, *Profit, Politics and Drugs* (London: McMillan, 1979), p. 5.

contextually specific to pharmaceutical medicine, and is linked clearly with the post-war economic boom, and for these reasons has been incorporated in the recent work of historians of the pharmaceutical industry, for example, Viviane Quirke<sup>23</sup> and Judy Slinn.<sup>24</sup> I will therefore define the “therapeutic revolution” as the period between 1950 and 1990, for the purposes of this study.

Various reasons – both scientific and societal - have been cited for this post-war pharmaceutical expansion.<sup>25</sup> First, during the twentieth century, new laboratory technology and techniques developed, which enabled more effective discovery of drug substances. This was partly due to the availability of new materials, and more sophisticated chemical analysis, extraction and purification techniques. In addition, the development of computers and information technology from the 1960s onwards enabled the development of systems that would perform Quantitative Structure Activity Relationship (QSAR) analysis – that is, determine how the shape of the molecule affects its biological activity. This process facilitated mass production and screening of large numbers of drug candidate molecules by pharmaceutical researchers.<sup>26</sup>

Second, the development of drug molecules with specific modes of action was, in part, due to an increased understanding of the “receptor” theory of drug action. According to receptor theory, many biological or biochemical processes are mediated by the action of biochemicals and hormones at specific biochemical receptor sites on the cells in different body tissues.<sup>27</sup> A simple example of this is: when a person is frightened, adrenaline in the bloodstream stimulates beta receptors in the heart, which leads to an increase in heart rate.

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<sup>23</sup> Viviane Quirke, “From Alkaloids to Gene Therapy: A Brief History of Drug Discovery in the 20<sup>th</sup> Century”, in *Making Medicines: A Brief History of Pharmacy and Pharmaceuticals*, edited by Stuart Anderson (London: Pharmaceutical Press, 2005), pp. 177-201.

<sup>24</sup> Slinn, “The Development of the Pharmaceutical Industry”, pp. 155-174.

<sup>25</sup> Slinn, “The Development of the Pharmaceutical Industry”, pp. 168-169.

<sup>26</sup> Jurgen Drews, “Drug Discovery: A Historical Perspective”, *Science*, 287 (2000), pp. 1960-1964.

<sup>27</sup> For a history of receptor theory, see John Parascandola and Ronald Jasensky, “Origins of the Receptor Theory of Drug Action”, *Bulletin of Medical History*, 48 (1974), pp. 199-220.

Consequently, the actions - and side-effects – of many drugs are due to their effects at different receptors in different parts of the body.

The idea of receptors arose from the work of the German clinician and medicinal chemist, Paul Ehrlich, on early antibacterial agents.<sup>28</sup> Ehrlich noted that these antibacterial agents – which were termed “chemotherapeutic agents” – had a selective affinity for certain biological tissues, and he proposed the idea that there were “chemo-receptors” on the tissues, to which the drug bound. The theory of receptors took a while to be widely accepted in pharmacology, mainly due to a debate about what a receptor was, and how it acted.<sup>29</sup> It was through the work of A.J. Clark in the 1920s and 1930s that the concept of receptors became widely understood and accepted. Clark demonstrated the principle of quantitative receptor responses – i.e. different amounts of a drug produced a different response at its receptor.<sup>30</sup> This paved the way for considerable research on synthetic drug molecules that might exert therapeutic effects by either acting as a stimulant (agonist) or a blocker (antagonist) at that receptor. Medicinal chemists would develop molecules that resembled a natural substance in chemical structure, but which would have additional stimulation or blocking effects at the receptor, and therefore have a therapeutic action. This enabled a wide range of specific drugs to be developed.

A third factor in the post-war therapeutic revolution was the effort of wartime therapeutic research during World War Two bearing fruit. The classic example of this was the development of penicillin in Britain from 1940 to 1944 by Howard Florey and colleagues at Oxford, following the discovery of the Penicillium mould by Sir Alexander Fleming in 1926.<sup>31</sup> The work was driven by the need for a specific antibiotic which could be used to treat battle-field infections, and therefore aid the war effort. Florey and his team developed a cottage industry

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<sup>28</sup> Drews, “Drug Discovery”, pp. 1960-1964.

<sup>29</sup> Viviane Quirke, “Putting Theory into Practice: James Black, Receptor Theory and the Development of Beta Blockers at ICI, 1958-1976”, *Medical History*, 50 (2006), pp. 73-75.

<sup>30</sup> Quirke, “Putting Theory into Practice”, pp. 73-75.

<sup>31</sup> Jonathan Liebenau, “The Rise of the British Pharmaceutical Industry”, *British Medical Journal*, 301 (1990), pp. 724-728, p. 733.

for isolating and purifying the active penicillin from the mould. However, they could do so only in moderate quantities, because of the restrictions of life in wartime Britain. Once America entered the war, though, Florey took penicillin to the US, where companies such as Pfizer used their expertise in deep fermentation techniques to produce penicillin in much larger quantities. This paved the way for the development of different antibiotic molecules, and mass production of a range of antibiotics which could treat hitherto untreatable, and often life-threatening, bacterial infections.

Fourth, the pharmaceutical industry, like other industries, benefited economically from the post-war economic boom. There was significant investment in the biological and scientific industries at this time, and the formation of the NHS in Britain in 1948 created a mass market for new drugs, which was a factor in stimulating pharmaceutical development.<sup>32</sup>

The so-called “therapeutic revolution” era gave rise to rapid developments in various therapeutic areas, including antibiotics, cardiovascular medicine, respiratory medicine, psychopharmacology, hormonal therapies and various others. The societal impact and ethical implications of two pharmaceutical developments of this era – the oral contraceptive pill and SSRI antidepressants - will be explored in detail in two subsequent chapters of this thesis.

However, several other therapeutic developments are worthy of comment in this outline section. Work by James Black and colleagues at ICI Pharmaceuticals from 1958 onwards drew on increasingly sophisticated knowledge of beta-adrenoreceptors in the heart and blood vessels to develop the first beta receptor blocking drugs (“beta blockers”), which became the cornerstone of therapy for hypertension, angina and other cardiac conditions.<sup>33</sup> The potent beta-blocker, propranolol, was launched in 1965, and this was followed by atenolol in 1976, which is active only at beta receptors in the heart, and therefore has a more favourable side-effect profile than propranolol. Both these

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<sup>32</sup> Quirke, “From Alkaloids to Gene Therapy”, pp. 177-201.

<sup>33</sup> Quirke, “Putting Theory into Practice”, pp. 69-90.

drugs have had a significant effect on patient mortality and morbidity in various forms of cardiovascular disease.

Increasing knowledge of beta receptor pharmacology also led to the development of beta 2 receptor stimulants for the treatment of asthma, by David Jack and colleagues at Glaxo (now GlaxoSmithKline (GSK)).<sup>34</sup> These drugs act on the beta 2 receptors in the lungs to dilate the bronchial tubes, and are given by inhalation to relieve the symptoms of asthma and chronic obstructive pulmonary disease (COPD). The first of these was salbutamol, launched in 1969 as Ventolin, which revolutionized the treatment of asthma. This was followed by the longer acting beta 2 agonist, salmeterol, launched in 1990.

In 1964, James Black left ICI Pharmaceuticals and went to work for American pharmaceutical firm, Smith, Kline and French (again now part of GSK) on their “histamine project”. In 1966, two subtypes of histamine receptor were identified, one of which (the histamine-2 (H2) receptor) specifically mediated stomach acid production. SK and F scientists therefore looked for a H2 blocking drug that would reduce gastric acid secretion, and therefore promote healing of gastric ulcers. After several unsuccessful compounds, and political tensions within the company concerning the progress of the project, the ground-breaking anti-ulcer drug, Tagamet (cimetidine), was launched in 1976.<sup>35</sup> The launch of Tagamet was a turning-point in the treatment of gastrointestinal diseases which before then had been a cause of considerable morbidity and chronic pain and discomfort for sufferers.

What is the legacy of the age of expansion of drug discovery known as the “therapeutic revolution”? It certainly led to the growth of the pharmaceutical industry, both commercially and in terms of its marketing activities. There was an exponential increase in pharmaceutical industry business value worldwide, from \$600million before the Second World War, to \$4000million in the mid-

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<sup>34</sup> Jenny Bryan, “Ventolin remains a breath of fresh air”, *Pharmaceutical Journal*, 279 (2007), pp. 404-405.

<sup>35</sup> Herdis Molinder, “The Development of Cimetidine: 1964 – 1976 – A Human Story”, *Journal of Clinical Gastroenterology*, 19 (1994), pp. 248-254.

1950s.<sup>36</sup> Liebenau notes that the world pharmaceutical market continued to expand through the 1960s and 1970s; he states that the worldwide market was worth \$10billion in the mid-60s, but increased to \$36billion in the mid-70s and \$90billion by the early 1980s.<sup>37</sup> This market activity has been dominated by the economies of the developed countries – principally the United States, Britain, Germany, Switzerland and Japan. Prentis and Walker note that, from 1964 to 1980, the number of new drugs produced by British pharmaceutical companies increased year on year, due to development of high throughput screening, as previously described.<sup>38</sup> However, the number of new drugs rejected increased as well, due to more sophisticated safety testing and regulatory requirements. Furthermore, from the 1950s, many native British pharmaceutical companies expanded into other markets, for example the US and Europe, and correspondingly many American pharmaceutical companies (for example, Pfizer, Merck and Co, and Smith, Kline and French) began trading in the UK. The pharmaceutical industry has certainly been successful commercially because of the “therapeutic revolution”, but has this revolution had a significant effect on human life, health and flourishing? The next section of this chapter will evaluate the impact of developments of chemical therapeutics on human life and health from a demographic and epidemiological perspective during the twentieth century.

#### 1.4. Human Life & Flourishing in the Twentieth Century

During the twentieth century, there has been the most rapid decline in mortality in human history. United Nations data show that world average life expectancy (at birth) has increased from 48 years in 1950-1955 to 68 years in 2005-2010.<sup>39</sup> These averages includes data from the developing world; the life expectancies for developed countries alone are higher. For example, life expectancy from

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<sup>36</sup> Slinn, “The Development of the Pharmaceutical Industry”, p. 162.

<sup>37</sup> Liebenau, “The Rise of the British Pharmaceutical Industry”, p. 724.

<sup>38</sup> R.A. Prentis and S.R. Walker, “Trends in the Development of New Medicines by UK-owned Pharmaceutical Companies (1966-1980)”, *British Journal of Clinical Pharmacology*, 21 (1986), pp. 437-443.

<sup>39</sup> United Nations. "Department of Economic and Social Affairs, Population Division (2011). World Population Prospects: The 2010 Revision", 2011, <http://esa.un.org/wpp/> (accessed May 2015).

birth in the UK in 2012 was reported as 83.3 years for women, and 79.2 years for men.<sup>40</sup>

As the figures suggest, there is considerable worldwide variation in life expectancy. The United Nations (UN) Population Report indicates that there has been little improvement of life expectancy in Africa, due

“in large part to the HIV/AIDS epidemic, other factors have also played a role, including armed conflict, economic stagnation, and resurgent infectious diseases such as tuberculosis and malaria.”<sup>41</sup>

UN data on mortality trends show that the major determinant of global life expectancy now is the prevalence of HIV/AIDS in the African countries.<sup>42</sup> It is recognised that improvements in HIV therapy, and wider access to such therapy, are likely to have a major impact on population and life expectancy in Africa over the next 100 years.<sup>43</sup>

As evidenced by the changes in life expectancy reported, mortality rates have been falling during the past century. In the UK, there was a sharp decline in mortality between the late nineteenth century and approximately 1930, and then a more gradual decline throughout the remainder of the twentieth century.<sup>44</sup> In particular, there have been substantial reductions of infant mortality (death in the first year of life, recorded as deaths per 1000 live births) during the twentieth century. UK government figures for the twentieth century indicate that the rate of

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<sup>40</sup> Joe Hicks and Grahame Allen, “A Century of Change: Trends in UK Statistics since 1900”, House of Commons Research Paper 99/111 (1999), p. 8.

<sup>41</sup> United Nations. “Department of Economic and Social Affairs, Population Division (2011). World Population Prospects: The 2010 Revision”, 2011 <http://esa.un.org/wpp/> (accessed May 2015).

<sup>42</sup> United Nations. “Department of Economic and Social Affairs, Population Division (2013). World Mortality Report 2013”, 2013, <https://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-2013.asp> (accessed May 2015)

<sup>43</sup> United Nations. “Department of Economic and Social Affairs, Population Division (2011). World Population Prospects: The 2010 Revision”, 2011 <http://esa.un.org/wpp/> (accessed May 2015).

<sup>44</sup> Neil Tranter, *British Population in the Twentieth Century* (Basingstoke: MacMillan, 1996), p. 64.

infant mortality decreased from 140 deaths per 1000 live births in 1900 to 5.8 per 1000 live births in 1997.<sup>45</sup>

The Organisation for Economic Cooperation and Development (OECD) attributes this worldwide improvement of life expectancy to better standards of living, better education, better nutrition, sanitation and housing and improved health services - and access to those services.<sup>46</sup> The population demographer, Neil Tranter, has discussed the factors contributing to the general reduction of mortality and increased life expectancy during the twentieth century.<sup>47</sup> He states that the marked improvements in life expectancy in the late nineteenth century and the first half of the twentieth century have been largely due to a reduction in communicable diseases, such as influenza, smallpox, measles, cholera, dysentery and others. He claims that there may be some biological factors in this – for example, reduction of disease virulence or increase in human genetic resistance – although, given the timescale involved, this seems doubtful. However, he claims that this reduction in mortality has been mainly due to human factors, such as improved nutrition, better housing, cleaner water, improved hygiene and effective quarantine/isolation procedures to prevent the spread of communicable diseases. Furthermore, Tranter rightly argues that these public health measures, implemented in populous urban areas, have had the greatest impact on mortality statistics.<sup>48</sup> This reduction in mortality in the early twentieth century is also due to the development and commercial distribution of vaccines, as described previously.

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<sup>45</sup> Hicks and Allen, "A Century of Change", p. 8.

<sup>46</sup> Organisation for Economic Cooperation and Development (OECD) (2013), "OECD Factbook 2013: Economic, Environmental and Social Statistics," 2013, <http://dx.doi.org/10.1787/factbook-2013-95-en> (accessed May 2015).

<sup>47</sup> Tranter, *British Population in the Twentieth Century*, pp. 71-82.

<sup>48</sup> The factors underlying mortality reduction in the twentieth century have been hotly debated (Tranter, *British Population in the Twentieth Century*, p64ff). Public health measures (improved sanitation etc) may not have been sufficient to contribute to the sharp decrease in mortality in the early years of the twentieth century, and this decrease may have been due to improved nutrition and living conditions alone. Furthermore, while it has been often suggested that the sharp reduction of infant mortality in the early twentieth century was due in part to improved obstetric techniques, these techniques did not become commonplace until the 1930s, so this could not have been a factor.



However, Tranter argues, other factors have come into play to account for the ongoing gradual reduction of mortality during the latter half of the twentieth century.<sup>49</sup> First, there is the development of modern therapeutics; for example, antibacterial agents such as Prontosil and penicillin have had a significant impact on sepsis, and sulphapyridine, chloramphenicol and streptomycin a major effect on mortality from respiratory diseases. With cardiovascular disease, a third of the decline in cardiovascular mortality has been attributed to drugs such as beta blockers (for example, propranolol and atenolol, as mentioned previously) and anticoagulants, used for treatment of hypertension and for secondary prevention following a heart attack (i.e. to prevent a further heart attack, which might prove fatal). Second, reduced mortality in the second half of the twentieth century has also been influenced by increased access to life-saving treatments facilitated by the National Health Service, which was formed in 1948.

Not only have mortality rates fallen over the last century, but the causes of mortality have changed. UK population research indicates that, in 1880, infections and parasitic diseases were the largest cause of death, accounting for 33% of all deaths.<sup>50</sup> Furthermore, at that time, around 58% of deaths were classed as “other”, and this category included deaths with no symptoms, deaths of “old age” and deaths where the cause was poorly understood. However, by 1997, the leading causes of death were cancer (43%) and cardiovascular disease (26%), and only 17% of people died of infections. These changes in cause of mortality probably reflect the following factors:

- The impact of modern sanitation and antimicrobial therapy on the management of infectious diseases.
- Improved pathological understanding and diagnostic techniques to enable identification and classification of diseases previously classed as “other” (especially non-solid tumour cancers).

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<sup>49</sup> Tranter, *British Population in the Twentieth Century*, pp. 66-70.

<sup>50</sup> Hicks and Allen, “A Century of Change”, p. 9.

- Replacement of communicable, infectious diseases by “diseases of affluence”, such as heart disease and certain types of cancer, as the leading causes of mortality during the twentieth century.<sup>51</sup>.

As stated earlier, most of the reduction in mortality in developed countries over the last century has been due to factors such as better standards of living, better nutrition, sanitation and housing and improved health services.

Nevertheless, modern pharmacology has had a significant impact on mortality and life expectancy in the last fifty years or so. This has been largely due to progress in two areas: a) the use of antibiotics and vaccines against infectious diseases, and b) the availability of specific cardiovascular drugs to prevent heart attacks and stroke.

As well as its impact on health outcomes and the quality of human life, modern pharmacology has also contributed to the development of modern evidence-based medicine and has affected the ways in which medicine is practiced. Evidence-based medicine, and its ethical issues, has been discussed in detail by Woolf.<sup>52</sup> While medicine has always been evidence-based, in the sense that it is empirical (i.e. it responds to observations about the patient), Wolfe argues that modern evidence-based medicine seeks to make an explicit link between scientific findings about medicines, and public health policy concerning their use.<sup>53</sup>

Woolf asserts that this rational approach has become necessary because of “stirring advances” in pharmacology, which in turn have enabled increased capacity for treatment of a widening range of medical conditions, and which has meant that health budgets have been unable to keep up with technological advancement. Woolf argues that evidence-based medicine has clarified that some medicines have been under-used, others have been over-used and still

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<sup>51</sup> Tranter, “British Population in the Twentieth Century”, pp. 75-76.

<sup>52</sup> Steven Woolf, “Evidence-Based Medicine: A Historical and International Overview”, *Proceedings of the Royal College of Physicians of Edinburgh*, 31 (2001), pp. 39-41.

<sup>53</sup> A similar evidence-based approach, linked with public policy, will be needed to enable fair and equitable distribution of future biomedical enhancement technologies, as I will argue in Chapter 5.

others have been misused. An evidence-based approach to medicine therefore, in my view, contributes to ethical decision-making about medical treatments, and so I would argue that, as a general principle, future biomedical technologies – which would include technologies that could be classified as transhumanist – should be also be considered in an evidence-based way, in the same way as past and present medical technologies. I will explore this issue in more detail in Chapter 5.

Woolf highlights two ethical issues with evidence-based medicine. First, there is the problem that scientific criticisms of a treatment may lead policy makers (who may not appreciate the scientific nature of the criticisms) to limit funding and services to provide the treatment in an inappropriate way. This may encourage either a lack of transparency on the part of the pharmaceutical industry about the publication of clinical trial data, or a lack of candour on the part of some sections of the scientific and medical community about making comment to the media concerning new drugs. Second, there is the risk of what Woolf calls “cookbook” medicine, where clinicians might only treat a patient if clinical trials indicate that a treatment is beneficial, and may not treat a patient empirically, even when it is appropriate to do so.<sup>54</sup>

Following the “stirring advances” in pharmacology in the twentieth century, the scene is set for ever more sophisticated biomedical interventions in the twenty-first century. The use of recombinant DNA technology from the 1980s onwards led to the production of larger biological therapeutic molecules, as opposed to the small molecule medicines of the “therapeutic revolution” years.<sup>55</sup> These “biological” therapies affect disease processes at specific points in biochemical and cellular mechanisms. They therefore provide more treatment options, especially for endocrine and autoimmune diseases, and may provide benefits for increasingly specific patient subgroups. Consequently, these biological treatments introduce the possibility of truly personalised medicine – instead of

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<sup>54</sup> Steven Woolf, “Evidence-Based Medicine”, pp. 39-41.

<sup>55</sup> Kenneth Culver, “A Christian Physician at the Cross-roads of New Genetic Technologies and the Needs of Patients”, in *Beyond Cloning: Religion and the Remaking of Humanity*, edited by Ronald Cole-Turner (Harrisburg PA: Trinity Press International, 2001), pp. 14-34.

the same medicine being given to everyone with the same illness, medical treatment is customised for the individual patient, according to their specific disease type and personal characteristics – for example, age, sex, weight, and metabolic capacity. The next step is “genomic” medicine – the use of agents that have therapeutic effects by specifically increasing or decreasing the expression of different genes. Other high-tech future possibilities include medical nanotechnology, cryogenics, cybernetics, neural threads,<sup>56</sup> and various other technologies that are still only at the experimental stage, if that. These are the technologies that are often envisaged by the transhumanist movement. Because of their specific and potentially far-reaching effects, these new technologies have the potential to radically alter human life and experience in a way that previous forms of medicine have not.

Consequently, future biomedical technologies have been subject to scrutiny by theologians and ethicists, to an extent that has not been the case with many previous medical technologies. In some cases, these new biomedical technologies may give rise to hitherto unexpected consequences and new ethical issues; in other cases, these technologies may be treated with suspicion just because they are an unknown quantity culturally, even though they do not clearly raise any new ethical issues. Again, I will explore these issues in more detail in Chapter 5.

I have shown above that the “stirring advances” of modern pharmacology from the “therapeutic revolution” years have led to a reduction in human mortality, albeit a modest reduction compared to other human welfare factors, such as improved sanitation, housing, nutrition and standards of living. Yet, apart from occasional side effect “scares” and some trenchant media critics of the pharmaceutical industry as a whole, there have been no serious concerns about the overall ethical value of modern pharmacology, despite the relatively modest overall mortality benefits, and given the risks involved. Partly this is because medicines do more than reduce mortality – for example, they reduce morbidity

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<sup>56</sup> A device that would be implanted into the brain to convert thoughts (brain electrical activity) to digital information.

(suffering) and they improve quality of life. However, these benefits, especially improvement in quality of life, are harder to demonstrate in controlled studies and at a population level.

Therefore, it is possible that, because future transhumanist biomedical technologies are potentially more radical in their effects and their scope than past medical therapies, these technologies have the potential to provide proportionally far greater benefits for humanity than past medical treatments. Therefore, there might be a positive ethical argument for the appropriate use of transhumanist technologies in future, based on their radical therapeutic potential. Yet this positive ethical argument for transhumanist technologies as medical treatments is seldom articulated even by transhumanist scholars, and certainly not by Christian theologians. Consequently, it is all the more important that the ethical issues with transhumanism are fully examined, and then re-evaluated in the light of previous medical therapies, to gain an insight into the true ethical status of future transhumanist technologies. The potentially far-reaching therapeutic benefits of future transhumanist biomedical technologies on human health and flourishing, compared with the relatively modest impact of past therapeutic developments, will be taken into account in the ethical evaluation of medical technologies in Chapter 5.

Biomedical technologies – both the previous pharmacological advances of the modern era, and the proposed transhumanist biomedical enhancements of the future – give rise to medical ethical issues. A brief review of the history of medical ethics will be helpful to understand the issues discussed later in this thesis in their historical context. The next section of this introductory chapter provides this review.

#### 1.5. Approaches to Medical Ethics: Ancient, Modern and Post Modern

Medical ethics as a discipline has its roots in ancient times. Ancient traditions of medical ethics can be determined from the oaths of initiation taken by physicians and healers of that era. Two distinct traditions can be traced – an eastern tradition, based on ancient Indian medicine, and a western tradition,

based on the medical practice of ancient Greece.<sup>57</sup> This section will focus on the western tradition as this is most relevant to modern western medical practice, and to the ethical principles relating to the modern, and potential postmodern, therapeutics that are discussed in this thesis.

Hippocrates (c460-371 BC) is regarded as “the father of medicine”;<sup>58</sup> the Hippocratic Oath, an oath of initiation taken by new medical practitioners is one of the oldest sources of medical ethics, and the oath still forms part of physician induction in many countries in the modern age. The central ethical tenets of the Hippocratic Oath – which may be summarised as: a) do no harm, b) maintain confidentiality, and c) do not exploit patients – have not changed since ancient times.<sup>59</sup> Nutton notes that an important aspect of the Hippocratic Oath is its emphasis that there is no stigma in doing nothing, if doing nothing is the correct response in that case, and that the primary purpose of the oath is to differentiate good and bad practitioners.<sup>60</sup> Nevertheless, despite the fact that it is well-established, and is a primary source of medical ethics, the Hippocratic Oath has its problems. First, Nutton points out that the oath seems to regard medical ethics solely in terms of the obligations of belonging to a group – i.e. of medical practitioners.<sup>61</sup> This is at odds with the multidisciplinary and holistic ethos of healthcare in the modern context. Moreover, Nutton claims that the religious (albeit pagan) language of the oath suggests that it was written for a specific group of physicians and was not used as universally in the ancient world as is popularly thought. Second, Nutton contends that, rather than simply providing ethical guidance to resolve ethical dilemmas, the Oath actually introduced ethical dilemmas. An example of this might be the Oath’s prohibition of surgery at all costs.<sup>62</sup> However, I would suggest that this might be a twentieth

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<sup>57</sup> Mark Jackson, *The History of Medicine: A Beginner’s Guide* (London: Oneworld, 2014), p. 11.

<sup>58</sup> Jackson, *The History of Medicine*, p. 2.

<sup>59</sup> Jackson, *The History of Medicine*, p. 198.

<sup>60</sup> Vivian Nutton, “Medicine in the Greek World: 800-50BC”, in *The Western Medical Tradition 800BC – 1800AD*, edited by Lawrence Conrad, Michael Neve, Vivian Nutton, Roy Porter and Andrew Wear (Cambridge: Cambridge University Press, 1995), p. 29.

<sup>61</sup> Nutton, “Medicine in the Greek World”, p. 29.

<sup>62</sup> Nutton, “Medicine in the Greek World”, p. 29.

century perspective and may not take into account the fact that any surgery was highly dangerous prior to the development of modern anaesthesia and disinfection.

Longrigg, though, asserts that the Hippocratic Oath is concerned with ethics as a whole, not just the ethics of the practice of medicine, and regards the Oath as deontological in nature; that is to say it is primarily about the absolute duties of the practitioner.<sup>63</sup> Longrigg also suggests, correctly in my view, that the adoption of the Hippocratic Oath by Galen, a Roman physician of the second century, has contributed to its centrality in the Western medical tradition. Nevertheless, despite a clear ethical and cultural tradition of medicine in the ancient world, the operation of the human body at that time was understood solely in pre-modern terms, with the theory of the “humours” – that supposedly chemical substances called “humours” regulated the body, and that illness was caused by an imbalance of humours.<sup>64</sup>

Bryant, Baggott la Velle and Searle note that the practice and ethics of medicine in the ancient world was developed in the context of the development of moral reasoning and philosophical attitudes to life as a whole, and they describe the development of ethics in its socio-cultural context in the ancient world.<sup>65</sup> In his epic poems, Homer provided a narrative account of virtues such as love, courage, justice, piety and others, which served as a basis for developing moral reasoning. Socrates, however, questioned Homer’s account of virtues in a negative manner, and asked the question: what was the good of life? He coined the dictum, “It is better to suffer wrong than to do wrong.” His pessimism led to his condemnation by Athenian society, which in due course led to his suicide by self-poisoning.

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<sup>63</sup> James Longrigg, “Medicine in the Classical World” in *Western Medicine: An Illustrated History*, edited by Irvine Loudon (Oxford: Oxford University Press, 1997), p. 34.

<sup>64</sup> Jackson, *The History of Medicine*, pp. 17-18. It is interesting to compare the idea of “humours” with modern therapeutic science, based on circulating hormones and the balance of chemical action of drug molecules at cell receptors.

<sup>65</sup> John Bryant, Linda Baggott la Velle and John Searle, *Introduction to Bioethics* (Chichester: Wiley, 2005), pp. 19-20.

Plato was a student of Socrates and developed his mentor's thinking. Plato argued that the virtues of this world – for example, the triad of truth, goodness and beauty – could not be fully experienced in this world – and were, in fact, only expressions of perfect “forms” of these virtues in another heavenly world. This led to dualistic thinking, in which the body and materiality were a separate realm from spirit. This posed one of the greatest challenges to the Christian message of the early church; because of the incarnation of Christ and the coming of the Holy Spirit, there was no body-spirit divide inherent in Christian anthropology, and this supported a monistic, and holistic, view of the human person.<sup>66</sup>

Aristotle was, in turn, a student of Plato, but he moved away from Plato's theory of forms and, instead, asked the question: what are the goods of human life? In other words, what are the things of life that have moral currency and value, and lead to fulfilment, happiness and flourishing? Aristotle equated “happiness” with function. He argued that, by the application of reason, functions could be achieved, and the goods of life could be realised. Aristotle's *Nicomachean Ethics* was an example of how his theory worked out in practice. The work of Aristotle is particularly significant in medical ethics because his thinking was highly influential for Thomas Aquinas, and the medieval development of natural law theory.<sup>67</sup>

Bryant, Baggott la Velle and Searle then outline the principles of Judaeo-Christian ethics.<sup>68</sup> They state that ethics based on the Judaeo Christian tradition are based on the revelation of God, and obedience to God's revealed commands and covenant, obedience which brings with it moral tenets. God had spoken through the patriarchs and prophets - and moral codes had been given by God in the Decalogue and other legal material in the Old Testament. The

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<sup>66</sup> This is foundational for the importance of embodiment in Christian theological anthropology, which I will introduce in Chapter 2 and return to with reference to the case studies in Chapter 5.

<sup>67</sup> For an overview of natural law see Stephen Pope, “Natural Law and Christian Ethics”, in *Cambridge Companion to Christian Ethics*, edited by Robin Gill (Cambridge: Cambridge University Press, 2012), pp. 67-86.

<sup>68</sup> Bryant, Baggott la Velle and Searle, *Introduction to Bioethics*, pp. 20-21.



New Testament built onto this, and the early church developed an understanding of how to live ethically in a Christian way, in contrast to the prevailing Greek thought forms, and the culture of the Roman Empire at the time. The tension between Christian beliefs about the resurrection of the body and Plato-influenced dualisms is an example of this. After the conversion of the Emperor Constantine, the Christian ethical understanding of the world became embedded in the political structures of Western society in the Christendom era. This made the Christian ethical world view the received public ethical world view.

The particular contribution of Christianity to medical ethics has included the notion of a healing and reconciling God (for example, Exodus 15v26), the concept of *shalom*, which is often translated “peace”, and is concerned with human wholeness and flourishing, in its broadest sense. The idea of *shalom*, with connotations of health, is seen in Old Testament passages such as Psalm 32, Jeremiah 8v15 and Isaiah 53v5.<sup>69</sup> O’Brien and Harris quote Cornelius Plantinga’s helpful definition of *shalom* as,

“universal flourishing, wholeness, and delight—a rich state of affairs in which natural needs are satisfied and natural gifts fruitfully employed, all under the arch of God’s love”<sup>70</sup>

Moreover, passages from the New Testament portray Jesus – the Messiah and the Prince of Peace – as the bringer of *shalom* and healing (Luke 10v5-9; Hebrews 12v13-14). Jesus performed healing miracles (Mark 2v1-12; John 5v1-15) and by his death on the cross, Jesus provided the ultimate healing, by forgiving sins and reconciling the world to God. Thus, a message of healing appears to be central and integral to a Christian understanding of salvation.

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<sup>69</sup> This holistic approach is seen in modern approaches to health, such as that of the World Health Organisation (WHO) which defines health as “a state of complete physical, mental and social wellbeing, and not merely the absence of any disease or infirmity.” See WHO Constitution, <https://www.who.int/about/who-we-are/constitution>, (accessed March 2020).

<sup>70</sup> Graham O’Brien and Timothy Harris, “What on Earth Is God Doing? Relating Theology and Science through Biblical Theology”, *Perspectives on Science and Christian Faith*, 64 (2012), pp. 147-156.

The development of natural law is especially important for the development of medical ethics, as the natural law approach to ethics has underpinned Roman Catholic moral responses to modern medical developments – including both the cases described in this thesis – and will be discussed and critiqued in greater detail later in the thesis. Bryant, Baggott la Velle and Searle give an account of natural law, as it relates to medical ethics.<sup>71</sup> Natural law, they state, originates as far back as the Stoics in the fifth century BC. The central principle of natural law is, to quote Bryant, that “a good life is a life based in accordance with nature.” This was combined with the principle, derived from Aristotle, that nothing in nature is produced without a purpose, and that if a creature is able to fulfil its nature, then it is directed to morally good ends. Drawing on Aristotle and the Stoics, the medieval theologian Thomas Aquinas (1225-1274) developed natural law theory most fully. He developed Aristotle’s idea of the functions of life into a classification of general and specific human functions. According to Aquinas, reflection on human nature shows the ends or purposes to which human beings are naturally inclined, and this indicates moral imperatives in human life. Much Roman Catholic thinking on medicine is still based on natural law – so, for example, because procreation is the natural end of sex, the Roman Catholic Church has objected to contraception on theological grounds. This will be explored in greater detail in Chapter 3 of this thesis.

The Renaissance was a significant time for the development of medicine, as a discipline. The establishment of the “new” universities, and their medical curricula, meant that the dissection of human bodies became commonplace and, because of this, there was increasing knowledge of anatomy and physiology.<sup>72</sup> Jackson argues, reasonably, that the expansion of experimental knowledge of medicine at that time led to a gradual rejection of the humouralism of the Hippocratic and Galenic medical traditions, in favour of physiological mechanisms, based on the new empirical, experimental, observations.

Consequently, during the seventeenth century, a new type of medical practitioner emerged – one who used material treatments, for example herbal or

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<sup>71</sup> Bryant, Baggott la Velle and Searle, *Introduction to Bioethics*, pp. 21-22.

<sup>72</sup> Jackson, *The History of Medicine*, p. 61.

natural products, instead of relying on humoural theory. Wear terms such practitioners “iatrochemists” (*iatros* = doctor <sup>73</sup>) and these were the forerunners of both apothecaries (specialists in pharmaceutical medicine) and chemists.<sup>74</sup> Wear has described the development of iatrochemical medicine, which has traditionally been based on the principles of Paracelsus, the sixteenth century scientist and mystical writer, who strongly opposed traditional ideas of medicine from the ancient world.<sup>75</sup> Unsurprisingly, the iatrochemical practitioners faced intense opposition from the “establishment” – physicians of the Hippocratic and Galenic traditions - who regarded the newcomers as unprofessional charlatans. Nevertheless, the new paradigm of medicine found royal patronage in various countries, and gradually gained social and intellectual respectability, largely due to its links with modernity. Wear asserts that, in England and France, the new medicine held the moral high ground, because of its associations with Christian charity, as opposed to the avaricious and protectionist tendencies of the Hippocratic establishment.<sup>76</sup> In the seventeenth century, Puritans empathised with iatrochemical medicine because a search for personal knowledge in the natural world aligned well with the Reformed ideal of a personal relationship with God. Furthermore, the Puritans found iatrochemical medicine attractive because it did not have the “pagan” foundations of the Hippocratic tradition.<sup>77</sup>

The earliest British guide to medical ethics of the modern era was John Gregory’s text “Observations of Duties and Offices of a Physician”, published in 1770.<sup>78</sup> Another well-known publication of the era was Thomas Percival’s “Medical Ethics”, published in 1803.<sup>79</sup> Porter contends that these medical ethics books were by no means theoretical texts, but were written with the intention of encouraging patients to go to “established” physicians because of their codes of

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<sup>73</sup> A drug-induced disease is called an *iatrogenic* disease.

<sup>74</sup> Andrew Wear, “Medicine in Early Modern Europe, 1500-1700”, in *The Western Medical Tradition 800BC – 1800AD*, edited by Lawrence Conrad, Michael Neve, Vivian Nutton, Roy Porter and Andrew Wear (Cambridge: Cambridge University Press, 1995), pp. 320-325.

<sup>75</sup> Wear, “Medicine in Early Modern Europe, 1500-1700”, pp. 310-312.

<sup>76</sup> Wear, “Medicine in Early Modern Europe, 1500-1700”, p. 322.

<sup>77</sup> Wear, “Medicine in Early Modern Europe, 1500-1700”, p. 323.

<sup>78</sup> Jackson, *The History of Medicine*, p. 108.

<sup>79</sup> Jackson, *The History of Medicine*, p. 451.

conduct; in other words, that there was an implicit medical protectionist agenda to these publications.<sup>80</sup> In my view, however, this is debatable. The Enlightenment was a time of rational enquiry in many fields of human interest, and also a time of progressive humanism. Furthermore, medicine was in the process of developing its identity as a modern profession, at that time. It is quite possible that these publications were simply the fruits of the new era for the medical profession and were not necessarily written entirely to support a particular political agenda.

Nevertheless, the era from the Renaissance to the Enlightenment was a time of seismic change in medical ethical thinking. Bryant, Baggott la Velle and Seale argue that the Copernican revolution undermined religious understandings of the universe, which in turn, undermined traditional Christian moral thinking, based on religious revelation and an immutable natural law.<sup>81</sup> The general approach to ethics therefore shifted from God revealing ethical principles to humanity, to humanity determining ethical responses with the power of reason. With his “categorical imperative” or supreme principle of duty, Immanuel Kant developed a deontological – an absolute, duty-based – ethical system, which was independent of any notion of religious revelation.

However, a key ethical development for medicine in the modern era was consequentialism, which came to prominence in the eighteenth and nineteenth centuries. The best-known form of consequentialism was utilitarianism, which was developed by Jeremy Bentham and John Stuart Mill.<sup>82</sup> The consequentialist approach is that the rightness or wrongness of an action is determined by the consequences of the action, not by the duty or the motivation of the actor. Therefore, in principle, an act is good if it produces the greatest good for the greatest number of people. Consequentialism, in its various forms, is potentially problematic from a Christian perspective for various reasons. First, because of

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<sup>80</sup> Roy Porter, “The Eighteenth Century”, in *The Western Medical Tradition 800BC – 1800AD*, edited by Lawrence Conrad, Michael Neve, Vivian Nutton, Roy Porter and Andrew Wear (Cambridge: Cambridge University Press, 1995), p. 446.

<sup>81</sup> Bryant, Baggott la Velle and Seale, *Introduction to Bioethics*, p. 22.

<sup>82</sup> Bryant, Baggott la Velle and Seale, *Introduction to Bioethics*, p. 23.

revelation, the Christian ethical tradition has a clear deontological basis, and also stresses the importance of virtue, so is by no means a solely consequence-based ethical system. Second, consequentialism seems to have a limited perception of the scope of human good. Third, there is the problem of whether consequences can be anticipated. The fourth and possibly greatest difficulty is that a consequentialist approach could, for example, justify the murder of one person (prohibited in Christian terms), for a greater good.<sup>83</sup>

Nevertheless, consequentialism plays a major part in modern bioethics, since many medical economic arguments about cost-utility of medical treatments and distribution of healthcare resources are, in practice, made on consequentialist grounds. However, a purely consequentialist approach to ethics of biomedical technology is problematic, because of the issue of “unintended consequences” that may be observed with newly introduced treatments, for which there is limited experience. The issue of unintended consequences is an important one in the ethical evaluation of newly developed medical technologies and therefore highly relevant to proposed transhumanist technologies and will be discussed in more depth later in the thesis.

Another key influence on modern bioethics has been the Second World War, and its aftermath.<sup>84</sup> After the Nuremberg War Crimes Trials, there was a subsequent international awareness and condemnation of the Holocaust and Nazi atrocities during the war, and this marked the beginning of the modern human rights movement. Under the Nazi regime, non-consensual medical experiments had been conducted on prisoners – Jews, but also children and other vulnerable groups, and prisoners of war. At an ideological level, this experimentation was justified by the Nazis using a racial purity ideology, and the fact that these groups were regarded as sub-human (*Untermenschen*), so “did not count” as human beings. As a consequence of the subsequent international outcry, ethical standards for scientific experimentation and international human rights agreements were developed, such as the Nuremberg Code (1947), the World Medical Association’s Declaration of Geneva (1948), and the Helsinki

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<sup>83</sup> Neil Messer, *SCM Study Guide: Christian Ethics* (London: SCM, 2006), p. 80.

<sup>84</sup> Bryant, Baggott la Velle and Seale, *Introduction to Bioethics*, pp. 23-24.

Declaration (1964).<sup>85</sup> Duffin contends that the Nuremberg Code had little impact on the development of US life sciences research after the war;<sup>86</sup> nevertheless, as well as providing a framework for human rights, these standards did also provided the foundations for modern, ethical clinical trial methodology,<sup>87</sup> which is important in assessing the efficacy and safety of new drugs.<sup>88</sup>

Other stimuli for the development of modern bioethics as a discipline were: a) the perceived inadequacies of traditional forms of ethical thought; b) the rapid advance of biomedical technology (as evidenced by the post-war development of the pharmaceutical industry in the “therapeutic revolution” era); c) decreasing paternalism in medicine, and decreasing deference to the authority of the medical profession, and d) an increasing concern for the environment and the sustainability of the earth’s resources.<sup>89</sup>

Modern bioethics is therefore concerned not just with the practice of medicine and the behaviours of medical practitioners, but with the appropriate distribution of healthcare services in society, and the political and financial implications of this distribution. New medical technologies (for example, transplantation, genetic and reproductive technologies) have introduced new ethical issues, such as, 1) how much intervention is ethically justified, when radical forms of medical intervention are technologically possible? 2) at what point does death occur? and 3) how can scarce resources be distributed equitably?<sup>90</sup> The first and third of these issues are especially important in any ethical evaluation of future transhumanism and enhancement technologies. Indeed, I will show in Chapter 5 that, similarly, the ethics of transhumanist medical technologies are far broader than the ethics of individual medical intervention and in addition

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<sup>85</sup> Jackson, *The History of Medicine*, p. 171. At present, the Declaration of Geneva is being proposed as an alternative to the Hippocratic Oath for various healthcare professions, not just medicine.

<sup>86</sup> Jacalyn Duffin, *History of Medicine: A Scandalously Short Introduction* (Toronto: University of Toronto Press, 1999), p. 323.

<sup>87</sup> Duffin, *History of Medicine*, p. 105.

<sup>88</sup> Clinical trial methodological issues were of particular importance in the development of SSRI antidepressants, as will be discussed in Chapter 4.

<sup>89</sup> Bryant, Baggott la Velle and Searle, *Introduction to Bioethics*, p. 24.

<sup>90</sup> Jackson, *The History of Medicine*, p. 193.

relate to the equitable distribution of medical technologies in society and the extent to which human life and community as a whole is affected by their use.

To conclude this section, I would argue that, in its long and illustrious history, medical ethics has developed through three phases, a Hippocratic phase, a Renaissance/Enlightenment phase and a Late Modern phase. Initially, with the Hippocratic tradition of ancient Greece, medical ethics focused in the duties and behaviours of the medical practitioner. As the scientific knowledge and methods of medicine were undeveloped at that time, the conduct of the practitioner was the key determinant in the moral good and reputation of the practice of medicine. Then, following the Renaissance and Enlightenment, when greater experimental knowledge of the human body gradually brought more sophisticated methods of medical treatment, ethical questions in medicine began to focus on the techniques of medicine and the consequences of these techniques for the patient. Finally, in the late modern and post-modern era, with the developments of modern bioethics, the ethical questions of healthcare and medicine are no longer solely restricted to ethical questions about the practice of medicine. They now encompass questions about distribution of healthcare resources in society – budget, staffing, medicines and equipment - the relationship between healthcare and human rights in society and the extent to which medical intervention is appropriate in an age where radical and far-reaching medical technologies are available.

It is within this ethical context that the ethical implications of proposed future transhumanist biomedical technologies must be evaluated. I will evaluate transhumanist technologies in Chapter 2, but the final section of this opening chapter will examine the assumptions, scope and limitations of this project, and a brief discussion of the ethical and pastoral implications of this work.

#### 1.6. Assumptions, Scope & Limitations of the Project

This project makes some important assumptions:

- a) that past and future medical technologies can be compared in a like-for-like way using the chosen, published criteria. Given that previous therapeutic developments and future transhumanist technologies are

both forms of technology (i.e. material ways of effecting a task or process) used medically, this is a reasonable assumption. However, it must be acknowledged that the perception of technology is affected by prevailing sociocultural views of what a technology is. So, for example, a popular understanding of technology might be that it consists of computers and electronics; however, a wheel is a form of technology (albeit a well-established one).

- b) that ethical issues identified with previous medical technologies will be applicable to the discussion of future technologies. Given that medical ethics, at any time in history, is about the features or effects of a medical technology, and its impact on individual human beings, and on human society as a whole, it is reasonable to assume that the ethical issues arising from previous medical technologies would be applicable in some way to future biomedical technologies.
- c) that it is possible to determine permissible and desirable features of future medical technologies specifically from the standpoint of Christian ethics. Given that there has already been a Christian response to, and critique of, proposed transhumanism technologies (which will be discussed in detail in Chapter 2), and that there have often been Christian ethical issues with past medical treatments (including both the pharmaceutical case studies presented in this thesis), again it is reasonable to assume that a Christian ethical evaluation of biomedical technologies is equally possible for both past and future technologies.

The scope of this project is the evaluation of medical technologies from a perspective of Christian theological ethics, and how ethical findings from case studies of previous developments in chemical therapeutics might influence an ethical evaluation of future transhumanist biomedical developments. Some scientific history will be presented in this thesis (and indeed, has already been presented), but only as much as to provide the background and context for a study in theological ethics of medical science. Similarly, this work will explore and explicate areas of theology – for example, the *imago Dei*, theological anthropology and eschatology – but only as far as they are relevant to my ethical evaluation of biomedical technologies.



The main limitations of the project are therefore as follows:

- a) the project is a project of theological ethics and will focus on Christian ethical responses to medical technologies and the theological issues that underpin them.
- b) the project will concern itself with Christian views of medical ethics, although it is acknowledged that the other Abrahamic faiths (Judaism and Islam) may have similar ethical stances on use of medical technologies, arising from their doctrines of creation, humanity and eschatology.
- c) although the project surveys a range of proposed transhumanist technologies, it chooses just two case studies of past therapeutics from the “therapeutic revolution” era of twentieth century pharmaceutical development. This is to allow enough space to critically evaluate the theological ethical issues in detail. The two case studies – the contraceptive pill and SSRI antidepressants - have therefore been chosen carefully, and the rationale for this choice is presented later in this chapter.
- d) the implications of the findings of this project will be limited to medical ethics and pastoral care. While the project touches on broader theological issues – for example, social justice, gender theology, theology of ecology and the environment and human distinctiveness, among others - it will not explore these in any detail.

The next sections will examine in detail the methodology for the project, describing the literature review technique of the project, and the rationale for case studies and use of objective criteria.

### 1.7. Literature Review

In a PhD project, it is common to undertake a discrete literature review, in order to critically evaluate the research that has already taken place in the field, to determine where gaps in knowledge lie, and how the proposed research relates to the body of knowledge already available, and to define the scope and objectives of the proposed research project. This project is multidisciplinary in scope and engages with literature in different areas – clinical medicine, the

history of medicine, transhumanism, theology of technology and theological ethics – in order to create an ethical dialogue between past therapeutic developments and proposed future transhumanist biomedical technologies. It is therefore more appropriate to survey and critically evaluate relevant literature relating to each chapter as an ongoing process, and for this reason there is no discrete literature review for the project.

#### 1.8. Use of Case Studies

This study uses a case study methodology to examine two cases of pharmaceutical technology, looking specifically at the history of the development and use of the technology, its impact on society and Christian ethical responses to the technology. This section describes the benefits and drawbacks of case study methodology and explains why case studies have been used in this project.

Case studies were first adopted in the nineteenth century in the teaching of medicine and the law, because teachers found that students learnt general, abstract principles better from the review of specific, actual examples.<sup>91</sup> Case study methodology for teaching and research is now widespread in the social sciences, although it has been described - perhaps unfairly - as the “weak sibling” of social science methods, compared to surveys, ethnographic studies or analysis of archival information.<sup>92</sup> In addition, case studies have become the most widely-used method in practical theology for evaluating formation, faith experience or church or ministerial practice.<sup>93</sup> The case study has been particularly beneficial in the clinical pastoral education tradition,<sup>94</sup> and so it is a natural development for a case study methodology to be used here to evaluate Christian ethical responses to biomedical technologies.

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<sup>91</sup> Daniel Schipani, “Case Study Method”, in *The Wiley Blackwell Companion to Practical Theology*, edited by Bonnie Miller-McLemore (Chichester: Wiley Blackwell, 2011), pp. 91-101.

<sup>92</sup> Schipani, “Case Study Method”, p. 92; Robert Yin, *Case Study Research: Design and Methods*, 3<sup>rd</sup> Edition (Thousand Oaks: Sage, 2013), pp. 1-18.

<sup>93</sup> Schipani, “Case Study Method”, p. 91.

<sup>94</sup> Schipani, “Case Study Method”, p. 93.

Bill Gilham has described a “case” as having the following attributes: <sup>95</sup>

- 1) It is a unit of human activity embedded in the real world;
- 2) It can only be studied and understood in context;
- 3) It exists in the here and now, and
- 4) It merges into the context, so the case/context boundary is hard to determine.

Development of a new drug or medical technology fits well into this definition of a case because it is a specific activity but, as I have shown earlier in this chapter, takes place – in the developed health economies of the United Kingdom and United States - in a wider context. Furthermore, in terms of medical technology development, this context has four aspects – the alleviation of human suffering and fulfilment of healthcare needs, the scientific endeavour of the pharmaceutical and bioscience industries, the practice of medicine and finally government financial investment in life sciences research. Indeed, all these contextual strands are merged in the ethical evaluation of drug development which, again, makes case study methodology appropriate for this work.

In his discussion of case studies in practical theology, Schipani quotes Asquith’s definition of a case as “an organised and systematic way of studying and reporting various aspects of a person, family group or (in this case) a situation, using a structured outline of subjects and questions.” <sup>96</sup> The two case studies in this project are structured, systematic descriptions of two situations – the discovery and use of two types of drug – with the intention of evaluating these situations according to criteria for potential transhumanist developments, and analysing the ethical issues involved.

The relevant literature discusses the strengths and benefits of case studies:

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<sup>95</sup> Bill Gillham, *Case Study Research Methods* (London: Continuum, 2000), pp. 1-9.

<sup>96</sup> Schipani, “Case Study Method”, p. 91.

- 1) Case studies are good for answering “how” or “why” questions, rather than questions with quantitative answers.<sup>97</sup> A case study method is therefore suitable for theological ethical reflection.
- 2) Case studies are useful for situations where the investigator has little control over the events.<sup>98</sup> Both these case studies took place in the past, so they fit with this criterion.
- 3) Case studies are useful for contemporary events.<sup>99</sup> Although, as mentioned above, these two cases of drug development took place in the past, it was the recent past and, as shown in the case study chapters, these drug developments are “contemporary” in that their benefits are still being realised by human society at the current time. Furthermore, these cases are in the “here and now”, as described by Gillham’s definition of a case,<sup>100</sup> inasmuch as they are actual and specific, as opposed to abstract. These case studies can therefore be regarded as contemporary in their relevance.
- 4) Case studies can be used to assess multiple sources of evidence.<sup>101</sup> Thus, the case studies here encompass different domains of evidence from different types of literature – the scientific history of drug discovery, the impact of the drug on society and Christian ethical responses to the drug – in the same case study.
- 5) Case studies are helpful for naturalistic research – the exploration of human phenomena embedded in the real world, which accounts for “real world” complexity.<sup>102</sup> This, Gillham argues (rather stridently) is in opposition to the empiricism and positivism of the natural sciences. With a naturalistic approach, he states, there are three features: a) there are, in theory, no *a priori* theoretical assumptions and, although it is important to be aware of the related literature, it may not be relevant to the case in point; b) information derived from case studies is not “manufactured” in

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<sup>97</sup> Yin, *Case Study Research*, pp. 2-5.

<sup>98</sup> Yin, *Case Study Research*, pp. 2-5.

<sup>99</sup> Yin, *Case Study Research*, pp. 2-5.

<sup>100</sup> Gillham, *Case Study Research Methods*, p. 1.

<sup>101</sup> Gillham, *Case Study Research Methods*, p. 1.

<sup>102</sup> Gillham, *Case Study Research Methods*, pp. 5-8.

the same way that experimental data in the natural sciences can be “manufactured” by the experimental conditions,<sup>103</sup> and therefore, c) the conclusions of case studies are inductive, rather than deductive as natural science experimental method is. The cases used here are naturalistic, in that they use evidence from the real-world complexity of drug development to develop ethical principles. However, the study methodology used here is not entirely naturalistic, in that it imposes a structure on the case studies, and it assesses the cases according to particular objective criteria, in a way that might be analogous to the experimental conditions of natural sciences.

- 6) Case studies are reflective, in that they enable theological reflection about a specific, practical situation.<sup>104</sup> This, in my view, is an important element of any applied ethical study, and this reflexivity will be developed later in this thesis, especially during Chapter 5, and in the formulation of conclusions in Chapter 6.

However, case study methodology has its drawbacks, and has been criticised for various reasons. This next section examines criticisms that have been raised about case studies and assesses how relevant these criticisms are for the cases in this study.

Yin has given three criticisms of case studies as a method:<sup>105</sup>

- 1) Case studies have been criticised for lack of rigour; they can be constructed in a non-systematic way, so that equivocal evidence or biased views could affect the conclusions of the study.
- 2) Case studies provide little basis for generalisation; the case study is not a statistical “sample”, as scientific methodology might use, and it is generalisable only to a theoretical proposition, rather than to a population.

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<sup>103</sup> Gillham’s contrast of “real world” data from case studies with “manufactured” experimental data in the natural sciences is as sharp a contrast as that between the naturalism of case studies and the positivism of natural sciences.

<sup>104</sup> Schipani, “Case Study Method”, p. 92.

<sup>105</sup> Yin, *Case Study Research*, pp. 10-15.

- 3) Case studies can be hard to define closely and are in danger of being “aimless” in their scope, and thus can result in large, unwieldy documentation.

Concerning the first of these three criticisms, the danger of a lack of rigour can be averted by applying a clear structure and process to the presentation and evaluation of the case study – which has been done in this project – and by ensuring that the case is presented appropriately in the context of the whole project, which again has been done. Each of the two cases has a clear structure, comprising: a) scientific introduction, b) impact of the drug on society, c) motivations of the developers, d) Christian ethical responses to the development and e) theological and ethical critique of the drug according to the criteria for transhumanist developments proposed in Chapter 2.

Concerning the second of these criticisms, about generalisability, this might, at first sight, appear to be a legitimate criticism of this project. These two cases of past drug development are indeed being used to inform ethical reflection on any possible future transhumanist biomedical technologies. The question is: can these two past case studies be representative of all past medical developments? However, as discussed above, these case studies are more naturalistic than empiricist, and their conclusions concerning ethics of future technological projects are inductive rather than deductive. In any case, as I will argue below, the two case studies in this project have been carefully chosen because they have the potential to be most relevant to transhumanist medical developments.

Concerning the third criticism, about the scope, definition and length of case studies, the specific nature of the case studies and the way in which the material is structured in these two case studies will mitigate this problem.

### 1.9. Rationale for the Cases Chosen

This next section will explain why the two case studies in this thesis – the oral contraceptive pill and SSRI antidepressants – were chosen to develop an ethical dialogue with transhumanism. As described earlier, many of the drug discoveries during the therapeutic revolution years have had significant benefits for human health and wellbeing. For example:

- Development of penicillin and specifically acting modern antibiotics has significantly reduced mortality from serious systemic bacterial infections.
- Availability of beta blocking agents to reduce heart rate and blood pressure has had a major impact on the incidence of heart attacks and stroke, and the mortality and morbidity associated with these conditions.
- Use of inhaled salbutamol, as a bronchodilator, has made a significant difference to the quality of life and long-term health of individuals with asthma.
- The development of cimetidine and other specific antiulcer drugs for gastric ulcers has revolutionised the treatment of what was previously a debilitating disease.
- The development of increasingly sophisticated and specific cytotoxic and hormonal agents for cancer chemotherapy has improved the mortality rates and morbidity with various types of cancer.

Any of the above therapeutic developments have had far-reaching health benefits, in terms of mortality (life expectancy) and morbidity (quality of life), which, in turn, have had an impact on human flourishing. However, these benefits have been primarily at an individual and a medical level, and they have only had an indirect effect on human society as a whole.

The two case studies used in this study, however, have been chosen because, not only have they brought about health benefits for the individual, they have had an impact on society beyond the practice of medicine, and not merely on the health and wellbeing of society, but also on societal values and popular culture. Because of this impact, the ethical implications of these medicines are broader than just the medical ethical principles associated with the treatment of the individual, and the role of the healthcare practitioner. In his reflection on the impact of psychopharmacology on the individual and on society, psychiatrist David Healy has pointed out how both psychopharmacological agents (antipsychotics and antidepressants) and contraception have the potential to

change human society.<sup>106</sup> He claims that contraception has profoundly changed the sexual order, by changing the dynamics of sexual relationships and the role of women in society, and that psychopharmacology has changed the social order, by getting people out of mental institutions and into mainstream society, and eliminating the “hidden” population of mentally-ill people. Both these medical interventions – the contraceptive pill and SSRI antidepressants – have had effects on society, not just the health of the individual, which is why they have come to the attention of the churches and of Christian commentators and have been subject to ethical critique.

The contraceptive pill was the first drug to be widely distributed to a population that was otherwise healthy.<sup>107</sup> Consequently, although the pill may have specific benefits as a treatment for a proportion of women with menstrual disorders,<sup>108</sup> it is largely an “enhancement” for healthy women. This, in itself, raises ethical issues, and I would argue that the contraceptive pill has had a lesser impact on absolute human health outcomes than some other therapeutic developments - for example, the use of penicillin antibiotics for serious infections. But, because of its contraceptive effects, and therefore its impact on sex, marriage and sexual politics, the pill is more than just a medical intervention and has had a significant impact on relationships and on society as a whole. For this reason, Elaine May has described the pill as “a flashpoint for social transformation”,<sup>109</sup> and the use of the contraceptive pill rapidly came to the attention of Christian ethicists, and the moral theologians of the Catholic church, in particular. The opposition to hormonal contraception, largely on natural law grounds, by the

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<sup>106</sup> David Healy, "Psychopharmacology and the government of the self", Colloquium at the Centre for Addiction and Mental Health, *Nature Medicine*, 2000.

<sup>107</sup> Robert Jutte, *Contraception: A History*, translated by V. Russell (Cambridge: Polity Press, 2008), p. 288.

<sup>108</sup> Luis Bahamondes, Valeria Bahamondes and Lee P. Shulman, "Non-contraceptive benefits of hormonal and intrauterine reversible contraceptive methods" *Human Reproduction Update*, 21 (2015), pp. 640-651.

<sup>109</sup> Elaine Tyler May, *America and The Pill: A History of Promise, Peril and Liberation* (New York: Basic Books, 2010), p. 168.



Roman Catholic church is well-known.<sup>110</sup> It has already been mentioned in this chapter and will be described in more detail in Chapter 3.

In a similar way, although Prozac and other SSRIs were developed as specific treatments for clinical depression, they have been adopted for use in cases where the person has few or no symptoms of depression, to enhance personality and to help people feel “better than well”. This has led to the “Prozac phenomenon”, epitomised by the work of psychiatrist, Peter Kramer, which will be discussed in detail in Chapter 4.<sup>111</sup> Again, although SSRIs were an advance in the treatment of depression, and undoubtedly have reduced mortality relating to suicide because of their safety in overdose, they probably have not had as large an impact on health outcomes as some other therapeutic developments during the therapeutic revolution – for example, penicillin or beta blockers, or even some of the drug discoveries earlier in the history of psychopharmacology, such as the first antipsychotics. However, SSRI antidepressants have had an impact on society as a whole, due to their widespread use and their fine-tuned effects on personality and relationships. For this reason, psychiatrists, such as Kramer and Healy,<sup>112</sup> have highlighted the possible ethical issues with these drugs, and again they have come to the attention of various Christian commentators.<sup>113</sup> The Roman Catholic scholar, John-Mark Miravalle, has developed an ethical evaluation of SSRI use, based on Aquinas and natural law, analogous to the approach taken by the Roman Catholic church with the contraceptive pill.<sup>114</sup> I will evaluate Miravalle’s work at length in Chapter 4.

Overall, therefore, the societal effects of these two medical developments and their ethical implications, which are already recognised, make them the

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<sup>110</sup> Adrian Thatcher, *God, Sex and Gender: An Introduction* (Oxford: Wiley-Blackwell, 2011), pp. 211-233.

<sup>111</sup> Peter Kramer, *Listening to Prozac*, (New York/London: Penguin, 1993), pp. 1-21.

<sup>112</sup> Kramer, *Listening to Prozac*, p. xv; David Healy, *Let Them Eat Prozac: The Unhealthy Relationship Between the Pharmaceutical Industry and Depression* (New York/London: New York University Press, 2004), p. 255.

<sup>113</sup> For example, John Stapert, "Curing an Illness or Transforming the Self? The Power of Prozac", *Christian Century*, 111 (1994), pp. 684-687.

<sup>114</sup> Miravalle, *The Drug, The Soul and God*, p. 59.

optimum cases of previous drug development to use to open a dialogue on therapeutic ethics with future transhumanist proposals.

Nevertheless, I would like to make a few clarifications of scope with these cases. The case study of contraception concerns the use of the oral contraceptive pill only, as first launched in 1960 and developed from that time, because this is what has had the greatest initial impact on society, and this is what the Roman Catholic church significantly reacted to, with the publication of *Humanae Vitae* in 1968. This case study does not include other forms of hormonal contraception, such as depot injections (Depo-Provera) and implants (Norplant, NexPlanon etc); because of their long-acting nature and the potential for non-consensual administration, there are additional ethical issues with these forms of hormonal contraception,<sup>115</sup> which will not be considered by this study.

The case study of SSRI antidepressants will focus on the five selective serotonin reuptake inhibitors launched between 1988 and 1991 – namely, fluoxetine (brand name: Prozac), fluvoxamine (Faverin), sertraline (Lustral, Zoloft), paroxetine (Seroxat, Paxil) and citalopram (Celexa, Cipramil), since these are the drugs with the largest US market shares that will have contributed most to the SSRI cultural phenomenon, and that have attracted attention from ethicists.<sup>116</sup> Other newer antidepressants, such as venlafaxine and mirtazapine, may have similar levels of efficacy and clinical utility, but are not included in this study. In addition, in this thesis, the term “SSRI antidepressants” is used to signify the whole group taken as a whole, and the term “Prozac” (the brand name for fluoxetine) is used in general terms to refer to any SSRI use in popular culture (e.g “the Prozac phenomenon”), as it is often used in that way in the relevant literature.

#### 1.10. Use of Objective Criteria

In this project, particular objective criteria are used – both general criteria, to evaluate the extent to which a biomedical technology can be considered a

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<sup>115</sup> See Betsy Hartmann, *Reproductive Rights and Wrongs: The Global Politics of Population Control* (Boston: South End Press, 1995), p. 202.

<sup>116</sup> For example, Guy Kahane and Julian Savulescu, “Normal Human Variation: Refocussing the Enhancement Debate”, *Bioethics*, 29 (2015), pp. 133-143.

transhumanist development and specific criteria to facilitate their ethical evaluation. These criteria are applied equally to proposed transhumanist technologies in Chapter 2, the oral contraceptive pill in Chapter 3 and SSRI antidepressants in Chapter 4. The objective criteria chosen are an important tool for determining the extent to which the different therapeutic developments may be considered equivalent, and therefore the extent to which ethical issues raised with previous therapeutic developments are applicable to future transhumanist proposals, and might therefore add to, or modify, current Christian ethical views of transhumanism.

Criteria (from the Greek *krisis* – points of judgement) are important in general terms because they provide an objective view from which to evaluate specific cases or instances, and they also set limits on, and provide structure to, the resulting discussion. The importance of structure in a case study methodology has already been discussed. Criteria are a means of making information coherent and intelligible. In his study of *phronēsis* (practical wisdom) as a *via media* between foundationalism and nihilism, Guarino asserts that “because all theories and forms of life are not equally true, criteria must be developed so as to distinguish coherency from incoherency, and rationality from irrationality.”<sup>117</sup> Another important role of criteria is to make existential questions universally intelligible. Jacobsen argues that, for universal and public understanding of existential questions, criteria accessible to all must be used to present their truth.<sup>118</sup> I would argue that objective criteria therefore have an important role in the methodology of this study given that, in popular culture, scientific knowledge is often treated as a specialist, esoteric domain and the objective of this project is to formulate a universal and publicly intelligible ethical approach to future technologies based on experience with previous technologies.

All these qualities of criteria are important when considering an evaluation of the transhumanism movement in particular. As will be shown in Chapter 2, the

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<sup>117</sup> Thomas Guarino, “Between Foundationalism and Nihilism: Is Phronesis the Via Media for Theology?”, *Theological Studies*, 54 (1993), pp. 37-54.

<sup>118</sup> Eneida Jacobsen, “Models of Public Theology”, *International Journal of Public Theology*, 6 (2012), pp. 7–22.

transhumanist movement is broad and philosophically diffuse, with a varied range of adherents, and the use of criteria is therefore an important means of enabling a structured, coherent, rational and objective overall assessment of the movement and its proposed technologies. The transhumanist movement might seem like an esoteric sect but, from a preliminary view, the technologies it proposes would appear to have far-reaching implications for human life and flourishing, and how human life might be lived in the future. It is right, therefore, that the issues and ethical questions surrounding this are made publicly accessible and intelligible, and the use of criteria here facilitates this process of clarification.

In this study, three sets of criteria are used to assess the biomedical technologies – one general set of criteria, to assess whether the technology can be considered a transhumanist technology, and two sets of theologically-informed criteria, to facilitate the ethical evaluation of the technology. Between them, these three sets of criteria are used to provide a comprehensive assessment of a biomedical technology to understand its status as a transhumanist technology and the ethical issues associated with it.

The general criteria for a transhumanist biomedical technology used in this study are derived from the work of transhumanist scholars, and are as follows:

- 1) That it is a technology<sup>119</sup> – in other words, it is a material means of effecting a task or process.
- 2) That the technology is applied to a human person in some way.<sup>120</sup> At the core of transhumanism is the transformation of the human condition, and the improvement of human society.

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<sup>119</sup> Max More, “The Philosophy of Transhumanism”, in *The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology and Philosophy of the Post-Human Future*, edited by Max More and Natasha Vita-More (Chichester: Wiley-Blackwell, 2013), p. 13.

<sup>120</sup> World Transhumanism Association, “Transhumanist Declaration”, pp. 54-55.

- 3) That the technology is applied to the human person to improve human function, increase longevity or promote human flourishing.<sup>121</sup>
- 4) That the human person has autonomy in the use of the technology – in other words, the technology is not being applied in a coercive way.<sup>122</sup>

These criteria are as broad in scope as the transhumanist movement itself. Furthermore, as I will demonstrate in detail in Chapter 2, these criteria are derived from the literature of transhumanism and so their application to transhumanist technologies is, in a sense, a circular argument. However, it is instructive to apply these general criteria to the two therapeutic case studies, which concern pharmaceutical products that were developed mainly before the development of transhumanism as a movement – to evaluate the extent to which these pharmaceutical developments were, in their time, transhumanist in character.

In addition, two specific sets of theologically informed criteria are used to assess the ethical aspects of the biomedical technologies in this project.

The first of these sets is based on the work of theological ethicist, Neil Messer, who has developed four “diagnostic questions” about whether a biotechnological project is aligned with God’s saving work in the world, or not.<sup>123</sup>

These diagnostic questions would be applicable to transhumanist developments, as radical biomedical enhancements are essentially biotechnology projects. These questions are as follows:

- 1) Is the project good news for the poor?
- 2) Is the project an attempt to be “like God” (in respect of Genesis 3v5) or does it conform to the image of God? (Genesis 1v26)
- 3) What attitude does the project embody towards the material world (including our own bodies)?

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<sup>121</sup> World Transhumanism Association, “Transhumanist Declaration”, pp. 54-55.

<sup>122</sup> More, “Philosophy of Transhumanism”, p. 13.

<sup>123</sup> Neil Messer, *Selfish Genes and Christian Ethics*, pp. 229-235.

4) What attitude does the project embody towards past failures?

The second set of theologically-informed criteria are based on the work of Elaine Graham,<sup>124</sup> who identifies three theological issues that are problematic with the concept of transhumanism – embodiment, autonomy and subjectivity – and which should be explored with any new biomedical technology. These issues are:

- 1) Autonomy – the problem with transhumanist medical technologies is that they enable unbridled autonomy in a negative manner.
- 2) Subjectivity – the problem with transhumanist medical technologies is that they are focused too much on the users’ subjective experiences.
- 3) Embodiment – the problem with transhumanist technologies is that they interfere with the integrity of the individual body and can therefore have a disruptive effect on the corporate body – the community.

The purpose of these two theologically informed sets of criteria is to define and describe what aspects of biomedical technology are problematic in respect of Christian ethics, and to determine the extent to which each of these technologies is desirable or permissible from a Christian ethical perspective. The utility of these specific theological criteria, and why they were chosen, will be discussed in greater detail in Chapter 2, following a detailed analysis of the transhumanism movement. The final section of this opening chapter will outline the significance of this research from a medical ethical and pastoral perspective.

1.11. Pastoral Significance of Ethics

Ronald Cole-Turner has argued that medical technology is imposing a new metaphysics on human nature.<sup>125</sup> Commenting on Peter Kramer’s book “Listening to Prozac”, Cole-Turner argues that reductionist biological arguments have caused humanity to conflate natural and spiritual considerations, and that

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<sup>124</sup> Elaine Graham, “In Whose Image?” pp. 56-69.

<sup>125</sup> Ronald Cole-Turner, “Towards a Theology for the Age of Biotechnology”, pp. 137-150.

human society is now trying to solve spiritual problems with pharmacological solutions. Similarly, Michael Burdett has pointed out the potentially profound impact of future medical technologies, arguing that transhumanism applies biomedical technology directly to the human being in a way that “radicalises human transcendence and transformation, advocating going beyond the human”.<sup>126</sup> For Burdett, the significance of transhumanist biomedical technologies is that they go beyond the purview of medicine and seek potential solutions to metaphysical issues.

A brief overview of pharmaceutical medicine and its effects on the human population suggests that pharmaceutical developments to date have had a significant impact on human health outcomes and well-being. However, this impact is small compared to other areas of progress with health and welfare in society during the modern era, for example, better sanitation, hygiene and nutrition. Proposed transhumanist biomedical technologies would have a more radical effect on human life than current medicines and could therefore potentially have a greater positive effect on human health and wellbeing than current medical therapies.

It is possible that, during the twenty-first century, there will be an “enhancement” revolution that will be more far-reaching than the “therapeutic revolution” of the twentieth century. However, this “enhancement revolution” will have medical implications. Transhumanist biomedical technologies may reduce mortality rates more significantly than pharmacological medicine to date and may lead to another shift in causes of death in future. Furthermore, given the current drive towards personalised medicine, the appropriate application of technologies that might be regarded as “high tech” and tending towards transhumanist – for example, gene therapy, medical nanotechnology or cybernetic enhancements – has the potential to enable truly personalised healthcare, by enhancing the human person in an individual, customisable way.

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<sup>126</sup> Michael Burdett, *Technology and the Rise of Transhumanism* (Cambridge: Grove, 2014), p. 5.

There will be commercial factors driving the implementation of future transhumanist technologies, as there have been with previous medical technologies. However, with future “high tech” biomedical technologies - which will be expensive, at least at the prototype and early commercialisation stage - there may be considerable budgetary restrictions to the deployment of such technologies in the health services of developed countries as they currently stand, if current approaches to health policy are adhered to.

However, during this “enhancement revolution” it will be important from an ethical perspective that what is good about the human person – and human society – is upheld and preserved. This would be a goal for people of goodwill of all religious traditions and none, although this thesis will examine this from a perspective of Christian theological ethics.

Given that issues relating to Christian ethics have been raised with past medical technologies – pharmacological treatments, including the two case studies presented in this thesis – it is important to critique transhumanist biomedical technologies from a specifically Christian perspective, because these technologies may affect humanity in a way contrary to how humanity is envisioned in Christian doctrine. However, it is also important to do this ethical evaluation in the light of experience with past medical technologies, to determine which ethical issues with future technologies really are significant in terms of Christian ethics, and which issues are likely to be of lesser significance, because they have been encountered already, and have found to be unwarranted.

This study has two important ethical implications. First, it will place the ethical evaluation of transhumanist technologies into its proper historical context, namely recent developments both in modern medicine and within the discipline of medical ethics. This will enable a nuanced and comprehensive - and realistic - ethical evaluation of future technologies, which will limit any unhelpful, “brave new world” popular perceptions and cultural assumptions and put any dystopian fears into perspective. In the earlier section of this chapter on the history of medical ethics, I indicated that to date there have been three phases of medical ethics, the Hippocratic phase, the Renaissance/Enlightenment phase and the



Late Modern phase. It may be that, in historical context, a new, fourth phase of medical ethics is needed to address the issues of transhumanism. Second, this study will provide an ethical framework which will allow theologians and scientists to consider the merits of future medical technologies that have not yet been discovered, and to consider ethical issues with medical technologies in a proactive way, when they are at the discovery, design and prototyping stages.

The study also has important pastoral implications. The church's reaction to medical developments is often a dissonant one. At an individual level, Christians seek health technologies to heal and control disease and improve quality of life, as much as any citizen in wider society. However, in preaching and public discourse, churches may give mixed messages about medical technology. On the one hand, medical technology is heralded as a gift to humanity from a God who is the creator and sustainer of all living things. But, on the other, churches are wary of exploring medical advances in any depth, either because of a lack of scientific knowledge about them, a cultural fear of their implications, or a theology that understands healing to be the prerogative of God alone. For this reason, there is little shared understanding of medical issues in the church, which leads to two pastoral issues. First, individual Christians may be left to face ethical decisions about medical treatment alone and without the church's support - typically when these decisions are urgent and relate to serious illness or end of life care for themselves or their family. Second, the lack of coherent engagement of churches with medical technologies means that, unless they work in medicine and healthcare, individual Christians may not have the confidence to speak about medical issues from a Christian perspective, openly and with an appropriate vocabulary, at a time when such medical technologies are the subject of much popular speculation.

My hope is that this project will make some contribution to all these important issues. These ethical and pastoral implications will be reviewed and expanded, based on the findings of this work, in the concluding chapter of the thesis. The next chapter, however, will develop this evaluation by describing transhumanism in its different forms, and applying the general and theologically

informed criteria described earlier to proposed future transhumanist technologies.

## **Chapter 2 – Humanity & Transhumanism**

### **2.1. Introduction**

This chapter will discuss the transhumanism movement, describe some issues in theological ethics with the transhumanism movement, discuss the objective criteria – the general criteria used to determine what a transhumanist technology is and the specific, theological criteria used to determine how the technology should be assessed ethically - and apply those criteria to some proposed transhumanist medical technologies. The first sections of this chapter will define transhumanism and describe the origins and intellectual landscape of the transhumanism movement. Because of the diverse nature of the transhumanist movement, a wide range of scholars will be discussed in this opening section, and their contributions will be discussed thematically and then evaluated, so that a taxonomy of the transhumanism movement can be developed. This will help to define and understand the key concepts of transhumanist thought, and the theological and ethical responses to them. There will then be a discussion on how the concept of transhumanist biomedical enhancement relates to the development of medicine to date, as described in the first chapter of the thesis.

After introducing the general criteria for a transhumanist development, the second part of the chapter will then provide a theological and ethical critique of transhumanist ideas, looking first at social ethics and then four issues in theological ethics, personal autonomy, nature, embodiment and the *imago Dei*. The third part of the chapter will then introduce the specific theological criteria that are used for ethical assessment of the past and future biomedical technologies in this study as the means of assessing the technologies from a specifically Christian perspective and explain why they have been chosen as criteria in this project. In the last part of this chapter, these criteria will then be used to provide a preliminary ethical evaluation of some of the transhumanist technologies proposed to date. These general and specific criteria will then be used in the following two chapters to help to assess the two previous therapeutic developments - the contraceptive pill and selective serotonin reuptake inhibitor (SSRI) antidepressants – to determine whether they can be

classed as transhumanist technologies, and to evaluate their ethical implications.

## 2.2. Definition of Transhumanism

In this first section, some definitions of transhumanism are presented. As seen in the previous chapter, notwithstanding socio-cultural influences, the development of modern medicine has been largely a scientific and technological endeavour. By contrast, transhumanism is essentially a philosophical and intellectual movement, mainly because many of the technologies it envisages are not yet scientifically feasible and have not yet been developed. Thus, Max More has defined transhumanism as,

“Philosophies of life...that seek the continuation and acceleration of the evolution of intelligent life beyond its current human form and human limitations by means of science, technology, guided by life-promoting principles and values”.<sup>127</sup>

More helpfully states that the name “transhumanism” implies that transhumanism goes beyond what is currently considered to be human. Therefore, it is not just about the use of education or culture to refine human life, but about using biomedical technology to go beyond the current biological limits of human life.<sup>128</sup>

In its literature, the World Transhumanist Association is slightly more specific, describing transhumanism as,

“the intellectual and cultural movement that affirms the possibility and desirability of fundamentally improving the human condition through applied reason, especially by developing and making widely available

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<sup>127</sup> Max More, “The Philosophy of Transhumanism”, in *The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology and Philosophy of the Post-Human Future*, edited by Max More and Natasha Vita-More (Chichester: Wiley Blackwell, 2013) pp. 1-17.

<sup>128</sup> More, “Philosophy of Transhumanism”, p. 5.

technologies to eliminate ageing and to greatly enhance human intellectual, physical and psychological capacities.”<sup>129</sup>

Another prominent transhumanist, Nicholas Bostrom, has defined transhumanism, more succinctly, as,

“an interdisciplinary approach to understanding and evaluating the opportunities for enhancing the human condition that are emerging through advancing technology”.<sup>130</sup>

The term “*transhumanist*” tends to be used to describe the process or technologies for human change, while the term “*post-human*” (as a noun) is used to describe the end point of transhumanism – the transformed human entity. Thus, More states that *transhumanist* technologies are applied so that humans may become *post-human* - that is to say, no longer recognisably human by current standards, but with greatly enhanced characteristics, such as greater physical capability, cognitive capacity, and extended life expectancy.<sup>131</sup>

Confusingly, the terms “*transhuman(ist)*” and “*post-human*” are sometimes used interchangeably in the literature; for example, Anthony Miccoli refers to “post-humanist scholars” in a way that suggests that, in fact, he is using the term *post-humanism* to describe the process, instead of *transhumanism*.<sup>132</sup>

These definitions indicate that, while proposed transhumanist technologies may be biomedical in character, they are applied with the intention of transforming human life in more radical and different ways than has happened with medical technologies to date.

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<sup>129</sup> World Transhumanism Association, “The Transhumanist FAQ, v2.1”, 2003, <http://www.transhumanism.org/index.php/wta/faq21/81/> (accessed August 2016).

<sup>130</sup> Nicholas Bostrom, “Transhumanist Values”, *Journal of Philosophical Research*, 30 (Supplement) (2005), p. 3.

<sup>131</sup> More, “Philosophy of Transhumanism”, p. 4.

<sup>132</sup> Anthony Miccoli, *Post-human Suffering and the Technological Embrace*, (Lanham: Lexington, 2010), pp. 123-133.

### 2.3. The Origins of Transhumanism

This section examines the origins and historical development of the transhumanist movement. Human beings have sought to acquire immortality or new capacities since time immemorial.<sup>133</sup> The pseudo-science of alchemy was concerned with the notion of human transformation, and More has described the alchemists from the thirteenth century onwards as “proto-transhumanists”.<sup>134</sup> As discussed in Chapter 1, at the time of the Renaissance, nature and the human body became seen as legitimate objects of study and, subsequently, the Enlightenment focused on rationalism and empiricism. These intellectual changes enabled transhumanist aspirations to be envisaged, and the rise of modern science has made these aspirations realistic possibilities.

There have been various influences on the development of transhumanist thought. The work of Charles Darwin on evolution and natural selection has understandably been foundational to the development of transhumanism,<sup>135</sup> as it represented a sea change in the understanding of humanity, introducing the idea that there was no “fixed” human nature, but that human nature was still evolving and emerging. Accordingly, some transhumanists – for example, Ray Kurzweil and Hans Moravec - describe transhumanist technological development as continuous with, or analogous to, the process of human evolution.

Nietzsche and the existentialists were also significant for the development of transhumanist thought.<sup>136</sup> While Nietzsche was not interested in the role of technology in humanity *per se*, his ideas of individualistic experience, personal growth and cultural refinement arising from the incommensurability of human existence align well with the aims of the transhumanist movement. In addition, the works of scientist J.B.S. Haldane (*“Daedalus: Science and the Future”*), and

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<sup>133</sup> Nicholas Bostrom, “A History of Transhumanist Thought” *Journal of Evolution and Technology*, 14 (2005), p. 1.

<sup>134</sup> More, “Philosophy of Transhumanism”, p. 9.

<sup>135</sup> Bostrom, “History of Transhumanist Thought”, p. 3.

<sup>136</sup> Bostrom, “History of Transhumanist Thought”, p. 4.

of science fiction writer Aldous Huxley (*“Brave New World”*) have described the use of technology to transform human life radically, and have therefore fed the imagination of transhumanists.<sup>137</sup> During the 1960s, philosopher and author, F.M. Esfandiary, who subsequently changed his name to F.M. 2030, ran a series of classes entitled *“New Concepts of the Human”*. He described a transhumanist as a “transitional human who, by virtue of their technology usage, cultural values and lifestyle, constitutes an evolutionary link with the coming era of post-humanity.”<sup>138</sup> F.M. 2030 said that a transhumanist was characterised by; a) their use of technologies, b) their absence of religious beliefs, and c) their rejection of traditional family values.<sup>139</sup> In 1998, the World Transhumanist Association was formed by Nick Bostrom and David Pearce, in order to provide a respectable academic outlet for transhumanist ideas. The transhumanist movement began in North America, but transhumanism is gaining adherents throughout the western world,<sup>140</sup> which is significant for the future of medicine, and for socio-cultural attitudes to healthcare in developed countries, an issue that will be discussed in Chapters 5 and 6 of this thesis.

#### 2.4. The Intellectual Landscape of Transhumanism

The different protagonists of the transhumanist movement have taken different approaches to the transhumanist project, depending on their academic interests, and the worldviews underlying those interests. Nicholas Bostrom is a philosopher, and he rightly takes a holistic approach, viewing the transhumanist movement as part of the wider intellectual, cultural and social development of humanity, rather than simply a biotechnology project.<sup>141</sup> Bostrom argues that

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<sup>137</sup> More, “Philosophy of Transhumanism”, pp. 8, 11.

<sup>138</sup> Bostrom, “History of Transhumanist Thought”, p. 11.

<sup>139</sup> Bostrom, “History of Transhumanist Thought”, pp. 1-25. It could be argued that FM 2030’s characteristics of a transhumanist are already being seen in humanity in many western societies in the early twenty-first century.

<sup>140</sup> M.J. McNamee and S.D. Edwards, “Transhumanism, medical technology and slippery slopes”, *Journal of Medical Ethics*, 32 (2006), pp. 513-518.

<sup>141</sup> This aligns with the holistic view of health associated with Christian healing (see Lawrence W. Althouse, “Healing and Health in the Judaic-Christian Experience: A Return to Holism”, *Journal of Holistic Nursing*, 3 (1985), pp. 19-24.)

transhumanism has its roots in secular humanism;<sup>142</sup> he appears to understand transhumanism as a means of improving the human condition, in the tradition of liberal optimism and progress.<sup>143</sup>

Bostrom - perhaps naively - appears unconcerned about any loss of human values as a result of technological intervention, or about the possibility of the loss of human identity. He refers to the incompleteness of humanity, when he describes the transhumanist desire to make good the “half-baked” project of human nature.<sup>144</sup> He states that, from a transhumanist perspective, moral status is independent of species membership, but is related to intellectual capacity, rather than human embodiment.<sup>145</sup> As well as the theological concerns this raises in respect of embodiment, this view is also troublesome when considering the theological status of human beings who lack intellectual capacity for whatever reason, which has implications for the *imago Dei*, the understanding of how human beings bear the image of God. Both these theological issues will be explored later in this chapter.

Bostrom takes a futurist approach to the transhumanism project, exploring how existential risks to humanity might lead to global security threats and human extinction, and how technological benefits might in future lead to socioeconomic benefits. He also acknowledges the risks inherent in technology itself, and the problems of technology deployment related to distributive justice.

Bostrom has been described as transhumanism’s “most intellectually robust proponent”,<sup>146</sup> and the social objective of transhumanism that he cites – the use of technology to improve wellbeing for all people – is one that is indeed in keeping with the optimism of liberal humanism.

Max More, too, takes a philosophical view of transhumanism.<sup>147</sup> As described earlier, he defines transhumanism as a *life philosophy* which, he argues, is

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<sup>142</sup> Bostrom, “Transhumanist Values”, p. 2.

<sup>143</sup> Bostrom, “Transhumanist Values”, p. 10.

<sup>144</sup> Nicholas Bostrom, “Human genetic enhancements: A transhumanist perspective”, *Journal of Value Inquiry*, 37 (2004), pp. 493-506.

<sup>145</sup> McNamee and Edwards, “Transhumanism”, p. 514.

<sup>146</sup> McNamee and Edwards, “Transhumanism”, p. 513.

<sup>147</sup> More, “Philosophy of Transhumanism”, p. 4.



about actively seeking a better future, rather than praying to a deity to provide one.<sup>148</sup> More is therefore dismissive of religion - inappropriately so, in my view, given its cultural significance, irrespective of any specific theological commitments. More's *life philosophy* is devoid of any supernatural beliefs about physical transcendence, and yet his approach to transhumanism is, in fact, quasi-religious, inasmuch as he presents transhumanism as a life philosophy - a good way, or rule, for living life – in a way that seems analogous to religious belief and observance.

More is famous for his slogan, “No more gods, no more faith, no more timid holding back. The world belongs to post humanity”, which suggests technological optimism, confidence about the importance of the transhumanist project, and perhaps humanistic hubris. He asserts that transhumanists do not fear death or loathe their physical bodies, and they are not interested in utopia. Also, in apparent contrast to Bostrom, More states that transhumanism is not about predicting the future, but is about seeking goals for humanity, rather than writing a schedule for human history.

Unlike scholars with a technological background, such as Kurzweil and Moravec, More claims - again perhaps naively - that transhumanist technologies will not inevitably change humanity.<sup>149</sup> That said, More still has a provisional view of humanity, arguing that human nature is not an end in itself; that it is not perfect, nor is it a given.<sup>150</sup>

More has also discussed some key terminology of transhumanist thought.<sup>151</sup> He states that, as well as greater physical capability, cognitive capacity, and extended life expectancy, the post-human may also have *morphological freedom* - freedom of form - meaning that they may not take on a recognisable humanoid body shape.<sup>152</sup> For example, the post-human person may be a

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<sup>148</sup> More, “Philosophy of Transhumanism”, p. 4.

<sup>149</sup> More, “Philosophy of Transhumanism”, p. 4.

<sup>150</sup> More, “Philosophy of Transhumanism”, p. 5.

<sup>151</sup> More, “Philosophy of Transhumanism”, pp. 4-5.

<sup>152</sup> More, “Philosophy of Transhumanism”, p. 4.

cyborg,<sup>153</sup> or they may be disembodied, as would happen with mind uploading technology.<sup>154</sup>

More also describes the idea of *singularity* – a point in history that might be reached when, due to environmental conditions or scientific discoveries, humanity can no longer continue in its current form of existence.<sup>155</sup> Lastly, More describes the concept of *extropy*, a term that he himself has coined (a term complementary to the physicochemical concept of entropy), which describes the drive to improve humanity beyond its current constraints, and extend the human race beyond its current form.<sup>156</sup>

Julian Savulescu is an ethicist, and his espousal of transhumanist enhancements arises from his consequentialist ethics.<sup>157</sup> He makes ethical arguments in favour of enhancements, based on what he considers to be the consequential benefits for humanity. For example, he has proposed the concept of *procreative beneficence*, which states that parents have a right to select the “best possible” child available to them, based on the best available evidence.<sup>158</sup> Savulescu has a permissive attitude to the idea of biological enhancement – so, for example, he claims that the use of the drug modafinil to achieve greater mental alertness is no different ethically to drinking caffeinated drinks, which is a normal part of daily life at present.<sup>159</sup> Savulescu is therefore interested in the ethical issues surrounding the enhancement potential of drugs that are already

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<sup>153</sup> A cyborg is a human-machine hybrid, where parts of the human body are augmented and replaced by prostheses or robotic components, with the objective of enhancing (or simply restoring) function.

<sup>154</sup> Mind-uploading is where the informational content of the human brain is uploaded onto a computer, so that the human “person” can be alive, without the substrate of a human body.

<sup>155</sup> More, “Philosophy of Transhumanism”, p. 12.

<sup>156</sup> More, “Philosophy of Transhumanism”, p. 5.

<sup>157</sup> Julian Savulescu, “The Human Prejudice and the Moral Status of Enhanced Beings: What do we owe the gods?”, in *Human Enhancement*, edited by Julian Savulescu and Nicholas Bostrom (Oxford: Oxford University Press, 2009), pp. 211-250.

<sup>158</sup> Julian Savulescu, “Procreative Beneficence: Why We Should Select the Best Children”, *Bioethics*, 15 (2001), pp. 413-426.

<sup>159</sup> Hannah Maslen, Nadira Faulmüller and Julian Savulescu, “Pharmacological cognitive enhancement—how neuroscientific research could advance ethical debate”, *Frontiers in Systems Neuroscience*, 8 (2014), p. 107.

in use – for example, the possible use of SSRIs, such as citalopram, for moral enhancement – not just the radical and biologically invasive forms of biomedical enhancement which might be available in the future.<sup>160</sup>

Savulescu argues that biomedical enhancement will promote autonomy but, interestingly for someone taking the consequentialist ethical approach, does not seem to acknowledge the valid criticism that transhumanist enhancements may lead to injustice, or even oppression, in human society, an issue that will be discussed later in this chapter.<sup>161</sup> Furthermore, Savulescu argues against “species-ism” – which he defines as any kind of privileging of human life over animal life for any reason.<sup>162</sup> He rejects the idea that humanity is intrinsically more valuable than any other species. He argues that species-ism is morally equivalent to racism and sexism and makes the dubious claim that species-ism can reinforce exclusivist attitudes – racism, sexism - within human society,<sup>163</sup> a claim that seems hard to support.

By contrast, Hans Moravec is a computing and cybernetics specialist, rather than a philosopher. Moravec points to the increasing sophistication of computers, the development of artificial intelligence (AI) and the fact that computing power is increasing exponentially.<sup>164</sup> He argues that a “break even” point of computer usefulness will occur at some point in the future, after which there will be rapid adoption of sophisticated computers and robotics in all areas of life, and a closer symbiosis between computers and humans will develop.<sup>165</sup> He asserts that intelligent machines already exist, and that humans must embrace the technological era, rather than shy away from it. Moravec claims that, although robots are limited in their applications now, humans often *want*

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<sup>160</sup> Guy Kahane and Julian Savulescu, “Normal Human Variation: Refocussing the Enhancement Debate”, *Bioethics*, 29 (2015), pp. 133-143.

<sup>161</sup> Robert Sparrow, “Better Living through Chemistry? A Reply to Savulescu and Persson on Moral Enhancement”, *Journal of Applied Philosophy*, 31 (2014), pp. 23-32.

<sup>162</sup> Savulescu, “The Human Prejudice”, pp. 211-212.

<sup>163</sup> Savulescu, “The Human Prejudice”, pp. 211-212.

<sup>164</sup> Hans Moravec, *Mind Children: The Future of Robot and Human Intelligence* (Cambridge: Harvard University Press, 1988), p. 6.

<sup>165</sup> Moravec, *Mind Children*, p. 2

robots to be limited – because of their egos, humans don't want to be upstaged by robots.<sup>166</sup>

Moravec discusses the potential loss of personal identity, a problem that might arise from *morphological freedom*, as described earlier – for example, with someone whose brain was uploaded onto a computer.<sup>167</sup> He addresses the identity issue by appealing to a distinction between *body identity*, where the person is defined by the material matter of their human body, and *pattern identity*, where a person is defined by their thought-patterns and processes.<sup>168</sup> This enables Moravec to address the embodiment problem that mind-uploading presents; however, he equates mind with brain, and makes the erroneous assumption that thought processes are the sum of human experience, when there are many other bodily, material and cultural aspects of human life. A criticism of the concept of pattern identity, as opposed to body identity, is that it can be described in computing/AI terms as a simulation, rather than real-life. However, More has countered this argument by questioning whether a simulation has less moral value than “real life”, and the difficulties, in some scenarios, of distinguishing between real life and simulation.<sup>169</sup>

Moravec's argument is rich with science-based speculation and technical possibilities, but details of the socio-cultural impact of transhumanism – what it will actually mean for human experience - are notably absent from the discussion and this, in my view, is a significant limitation of his work.

Ray Kurzweil is a computer specialist, and his scientific premise is similar to that of Moravec. Kurzweil argues that computer memories are doubling in size every twelve months and, although computer intelligence currently exceeds human intelligence only in some narrow domains (for example, playing chess), this will change as computers become more sophisticated and, in future, it will

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<sup>166</sup> Moravec, *Mind Children*, p. 108.

<sup>167</sup> Moravec, *Mind Children*, pp. 109-110.

<sup>168</sup> Moravec, *Mind Children*, p. 116.

<sup>169</sup> More, “Philosophy of Transhumanism”, p. 8.

be hard to see the difference between computer and human abilities.<sup>170</sup>

Kurzweil states that,

“it will be increasingly difficult to draw any clear distinction between the capabilities of human and machine intelligence. The advantages of computer intelligence, in terms of speed, accuracy and capacity, will be clear. The advantages of human intelligence, on the other hand, will be increasingly difficult to distinguish.”<sup>171</sup>

Kurzweil acknowledges the role of evolution in human development to date, and he argues that eventually computers will be able to evolve in a similar way to humans.<sup>172</sup> He states that,

“technology goes beyond the mere fashioning and making of tools. It involves a record of tool making and a progression in the sophistication of tools. It requires invention and is itself a continuation of evolution by other means.”<sup>173</sup>

Like Moravec, Kurzweil deals with the identity issue of the disembodied person by appealing to pattern identity, rather than body identity.<sup>174</sup> However, unlike Moravec, Kurzweil acknowledges the problem of disembodiment, stating that many of our human activities – for example, eating, sex and sport – don’t make sense without a body.<sup>175</sup> He therefore explores how synthetic bodies, built with nanotechnology and sophisticated virtual interfaces, will enable future post-humans to have sexual, creative and spiritual experiences.<sup>176</sup> He proposes a timescale of technological change and suggests that, by 2099, the “reverse engineering of humanity will be complete, and carbon-based human life will be obsolete”.<sup>177</sup> However, while Kurzweil’s vision is compelling scientifically and he

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<sup>170</sup> Ray Kurzweil, *The Age of Spiritual Machines: When Computers Exceed Human Intelligence* (New York: Penguin, 1999), pp. 2-3.

<sup>171</sup> Kurzweil, *Age of Spiritual Machines*, p. 4.

<sup>172</sup> Kurzweil, *Age of Spiritual Machines*, p. 18.

<sup>173</sup> Kurzweil, *Age of Spiritual Machines*, p. 14.

<sup>174</sup> Kurzweil, *Age of Spiritual Machines*, p. 51-55.

<sup>175</sup> Kurzweil, *Age of Spiritual Machines*, p. 133-134.

<sup>176</sup> Kurzweil, *Age of Spiritual Machines*, p. 146.

<sup>177</sup> Kurzweil, *Age of Spiritual Machines*, pp. 188-190.

seriously tries to picture human experiences in a post-human context, he too provides little ethical assessment of the benefits and risks of technology in a post-human future.

N. Katherine Hayles is a literary scholar, rather than a technologist, and her view of transhumanism is based on her study of the cyborg – the human/robot hybrid – in literature, and the semiotics of the human condition that emerge from that study.<sup>178</sup> She is highly critical of Moravec’s espousal of mind-uploading, and his vision of a disembodied post-human person.<sup>179</sup> She declares,

“How, I asked myself, was it possible for someone of Moravec’s obvious intelligence to believe that mind could be separated from body? Even assuming that such a separation was possible, how could anyone think that consciousness in an entirely different medium would remain unchanged, as if it had no connection with embodiment?”<sup>180</sup>

Hayles argues that, while embodiment does not secure gender distinction, it shows that thought is “a broader function which depends on the embodied form specifically”.<sup>181</sup> Hayles examines the meaning of human embodiment through a study of the cyborg and cybernetics in the texts of the science-fiction novelists Bernard Wolfe and Phillip K. Dick.

Of Wolfe’s novel, *Limbo*, she states that,

“the technical achievements of cybernetics are not at the centre of the text. Rather, they serve as a springboard to explore a variety of social, political and psychological issues...”<sup>182</sup>

For Hayles, like other scholars of the transhumanist movement, transhumanism is more than just about science and technology. Concerning Phillip K. Dick’s work, she observes that, “Dick is drawn to cybernetics themes because he

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<sup>178</sup> N. Katherine Hayles, *How we became Posthuman: Virtual Bodies in Cybernetics, Literature and Informatics* (Chicago and London: University of Chicago Press, 1999), p. 1.

<sup>179</sup> Hayles, *Virtual Bodies*, p. 1.

<sup>180</sup> Hayles, *Virtual Bodies*, p. 1.

<sup>181</sup> Hayles, *Virtual Bodies*, p. xi.

<sup>182</sup> Hayles, *Virtual Bodies*, p. 23.

understands that cybernetics radically destabilises the ontological foundations of what counts as human.”<sup>183</sup> Because it introduces the concept of hybridisation of flesh and machine in the human physical form, the cyborg appears to challenge the notion of body-mind dualism that, in one form or another, has often been significant in the understanding of human ontology from ancient times. She subsequently observes that “Moravec’s dream of downloading human consciousness into a computer would likely come in for some hard knocks in literature departments” because they “tend to be sceptical of any kind of transcendence, but especially of transcendence through technology.”<sup>184</sup> On the contrary, transcendence is an important issue for theologians, but the idea of transcendence through technology alone is one that theologians would be wary of because of their commitment to the Christian account of eschatology through relationship with Christ.

Hayles concludes that embodiment is an important aspect of humanity, and that the post-human person need not be anti-human or apocalyptic but can simply be a survivor of the human race. She states that, while post-humanity might evoke either the terror of human extinction, or the pleasure of a new way of being human, evolutionary history affects every aspect of humanity, so embodiment cannot be simply cast aside. She argues that,

“The body is the net result of thousands of years of sedimented evolutionary history, and it is naïve to think that this history does not affect human behaviours and every level of thought and action.”<sup>185</sup>

Hayles’ view of the importance of embodiment in human history and culture seems at first sight to be consonant with the Christian message of God who became embodied as Christ in human history. This contrasts with the problem of disembodiment with some transhumanist technologies, which will be discussed later in this chapter. However, Hayles’ claim that humans can “re-

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<sup>183</sup> Hayles, *Virtual Bodies*, p. 23.

<sup>184</sup> Hayles, *Virtual Bodies*, p. 284.

<sup>185</sup> Hayles, *Virtual Bodies*, p. 284.

flesh” themselves with technology could suggest that all material human life is just “informational instantiation”, as Miccoli has argued.<sup>186</sup>

Donna Haraway is a biologist, feminist and an historian of science and, in her work, she discusses the cyborg as a tool for mapping social and bodily reality.<sup>187</sup> Her underlying agenda is that natural science is a social construct, and that its core knowledge is anti-liberationist. She argues that,

“the degree to which the principle of domination is embedded in our natural sciences, especially in those disciplines which seek to explain social groups and behaviour, must not be underestimated.”<sup>188</sup>

She further argues that distinctions between pure and applied science and between nature and culture are all,

“versions of the philosophy of science that exploit the rupture between subject and object to justify the double ideology of firm scientific objectivity and mere personal subjectivity.”<sup>189</sup>

Consequently, she claims science is a “buttress of social control”, which historically has been used against women.<sup>190</sup> This view of science seems to me to be excessively anti-realist, given that the purpose of science is primarily to elucidate and test theories about the natural (real) world, rather than to develop and reinforce social and cultural constructs concerning human experience. The endeavour of evidenced-based pharmaceutical medicine to date has certainly been concerned with the application of scientific interventions to deal with the problems and limitations of the real world. Haraway goes on to argue from differences in the interpretation of observational studies of the behaviour of langur monkeys - although not, in my view, persuasively - that gender is an unavoidable condition of observation in these studies.<sup>191</sup> She states that “nature

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<sup>186</sup> Miccoli, *Post-human Suffering and the Technological Embrace*, pp. 123-133.

<sup>187</sup> Donna Haraway, *Simians, Cyborgs and Women: The Reinvention of Nature* (New York: Routledge, 1991), p. 149.

<sup>188</sup> Haraway, *Simians, Cyborgs and Women*, p. 8.

<sup>189</sup> Haraway, *Simians, Cyborgs and Women*, p. 8.

<sup>190</sup> Haraway, *Simians, Cyborgs and Women*, p. 8.

<sup>191</sup> Haraway, *Simians, Cyborgs and Women*, p. 106.



has been theorised and developed through the construct of the life sciences for capitalism and patriarchy".<sup>192</sup> Like Hayles, Haraway also identifies the potential of the cyborg to challenge dualism. Technological culture, she claims, challenges various dualisms in Western thought – between male and female, nature and culture – because, with the cyborg, it is not clear who makes, and who is made.<sup>193</sup>

## 2.5. Towards a Taxonomy of Transhumanism

A review of various transhumanist scholars suggests that, although they might be diverse in their views, the main protagonists of transhumanism might be classified into three main groups.

The first group of transhumanist thinkers might be classified as *philosophical transhumanists*. These are scholars who see transhumanism as a life philosophy, which will enrich human experience and provide a good way of life for adherents to follow. This group would include Max More and Nicholas Bostrom, and might also include ethicist, Julian Savulescu.

The second group of transhumanists might be classified as *technological transhumanists*. These are scholars from a technological background – computing, artificial intelligence and cybernetics specialists – who see transhumanism from the perspective of the effects of technology on human life, and the benefits that it can bring. This second group includes Ray Kurzweil and Hans Moravec. These thinkers discuss the seemingly inexorable advance of technology, and how humanity needs to respond to this development, and harness it in a positive way. They might, however, differ in their ideas about how exactly humanity might adopt technology to enhance human experience.

The third group of transhumanist scholars might be termed *ideological transhumanists*. This group explores the impact of transhumanist technology on human society; however, they do so in way that is neutral to technology per se but which, in my view, sees these technologies primarily as a tool for exploring

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<sup>192</sup> Haraway, *Simians, Cyborgs and Women*, p. 67.

<sup>193</sup> Haraway, *Simians, Cyborgs and Women*, p. 177.

cultural and ideological issues. So, for example, Katherine Hayles uses the cyborg in literature as a means of exploring embodiment as an element of gender identity, and Donna Haraway presents the cyborg as a means of challenging patriarchal and anti-liberationist tendencies in Western scientific thought.

Some transhumanists, such as Kurzweil and Moravec, are primarily interested in how technology will change humanity, but less interested in the social and cultural effects of the application of technology. By contrast, other transhumanists, such as Hayles and Haraway, are primarily interested in technology as a tool for exploration of ideological issues, such as feminism. However, despite the divergent trajectories and worldviews of specific transhumanist scholars, various common themes emerge across the transhumanist movement. These concern human nature and evolution, transcendence, the moral imperative of technology, identity and autonomy.

As seen in the work of both Bostrom and More, a key theme in transhumanism is that human nature is unfinished. As stated earlier, More asserts that transhumanists believe that human nature is not an end in itself, and that it is not perfect, nor a given.<sup>194</sup> Similarly, Nick Bostrom refers to the incompleteness of humanity, when he describes the transhumanist desire to make good the “half-baked” project of human nature.<sup>195</sup> The technological transhumanist writers, Ray Kurzweil and Hans Moravec, both cite the evolution of computing and artificial intelligence and suggest that the development of transhumanist technology is analogous to human evolution. Furthermore, the philosopher and author, F.M. Esfandiary acknowledged the unfinished-ness of human nature, when he described a transhumanist as a “transitional human who, by virtue of their technology usage...constitutes an evolutionary link with the coming era of post-humanity.”<sup>196</sup> While these views are consistent with the Darwinian notion

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<sup>194</sup> More, “Philosophy of Transhumanism”, p. 4.

<sup>195</sup> Nicholas Bostrom, “Human genetic enhancements: A transhumanist perspective”, *Journal of Value Inquiry*, 37 (2004), pp. 493-506.

<sup>196</sup> Fereidoun M. Esfandiary and FM-2030, *Are You a Transhuman? Monitoring and Stimulating Your Personal Rate of Growth in a Rapidly Changing World*. (New York: Warner, 1989), p. 149.

that there is no fixed human nature,<sup>197</sup> they are in stark contrast to the concept of natural law in Christian theology, and this will be explored in greater detail later in this chapter.

Another important theme in transhumanism is how biomedical technology will enable humanity to transcend itself. More's concept of *extropy* describes the use of transhumanist technology to help humanity reach beyond its current constraints, and to extend beyond its current form.<sup>198</sup> The main idea here is the opposite to the concept of *entropy* in chemical science, and is that humanity is no longer a closed system, but open to bigger possibilities. Similarly, in his critique of transhumanism, McNamee has observed that a key characteristic of the transhumanist movement is its refusal to accept the traditional limitations of humanity.<sup>199</sup> Transhumanism, he states, "deplores the standard paradigms" – cultural expectations, political expedience, religion – "that seek to make the world comfortable at the expense of human enhancement and advancement". Again, the implications of this for Christian eschatology will be explored later in the chapter.

Adherents of transhumanism will often cite a moral imperative to embracing transhumanist developments. For example, Bostrom has argued that scientists have a moral obligation to develop new medical technologies to eradicate disease and extend life.<sup>200</sup> Similarly, Freitas has emphasised the moral duty of humanity to explore new medical technologies, arguing that the loss of human life to disease is not only tragic at a personal level, but represents a tragic loss of knowledge and human capital.<sup>201</sup> Moravec emphasises the imperative of humanity's response to technology, when he asserts that intelligent machines already exist, and that humans must embrace the technological era, rather than

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<sup>197</sup> Bostrom, "History of Transhumanist Thought", p. 3.

<sup>198</sup> More, "Philosophy of Transhumanism", p. 5.

<sup>199</sup> M.J. McNamee and S.D. Edwards, "Transhumanism, medical technology and slippery slopes", *Journal of Medical Ethics*, 32 (2006), pp. 513-518.

<sup>200</sup> Bostrom, "Transhumanist Values", p. 10.

<sup>201</sup> Robert Freitas, "Welcome to the Future of Medicine", in *The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology and Philosophy of the Post-Human Future*, edited by Max More and Natasha Vita-More (Chichester: Wiley-Blackwell, 2013), pp. 67-72.

shy away from it.<sup>202</sup> Here there is some common ground with medical science, where there is equally a moral imperative to use pharmaceutical medicine to alleviate human suffering and improve human welfare and the human experience. This aspect will be explored further in Chapters 5 and 6.

Furthermore, the transhumanist movement has its roots in secular modernity,<sup>203</sup> and so it stresses the importance of being proactive, rather than reactive, about human goals, of creating better futures with technology, rather than praying to a deity to bring a better future. However, while modernity has been largely concerned with improving the lot of humanity through education and culture, transhumanism seeks to radically transform humanity specifically with technology.<sup>204</sup> Although development of technologies, such as transportation, medicine and electronic communications, have indeed been a feature of the era of modernity, transhumanism applies biomedical technology directly to the human being in a way that, to quote Michael Burdett, “radicalises human transcendence and transformation, advocating going beyond the human”.<sup>205</sup>

Transhumanist thought raises issues concerning personal identity. More states that *transhumanist* technologies are applied so that humans may become *post-human* - that is to say, no longer recognisably human by current standards.<sup>206</sup> The post-human person may have greater physical capability, cognitive capacity, and extended life expectancy, but they may also have *morphological freedom* - freedom of form - so they may not take on a recognisable humanoid body shape. As noted above, this may be problematic for body identity, but some transhumanists address this by appealing to *pattern identity*, that a person’s identity is defined by their thought patterns and processes, rather than their bodily form. This seems to be at odds with the idea of embodiment, and importance of the body, as a material, biological entity, in Christian theological ethics, based on the doctrine of the incarnation and the New Testament

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<sup>202</sup> Moravec, *Mind Children*, p. 108.

<sup>203</sup> More, “Philosophy of Transhumanism”, p. 4.

<sup>204</sup> Bostrom, “Transhumanism Values”, p. 4.

<sup>205</sup> Michael Burdett, *Technology and the Rise of Transhumanism*, (Cambridge: Grove, 2014), p. 5.

<sup>206</sup> More, “Philosophy of Transhumanism”, p. 4.

accounts of the bodily resurrection of Christ. This issue will be discussed in more depth in a later section of this chapter.

Autonomy and personal choice are important in the transhumanist worldview, as might be expected because of transhumanism's alignment to liberal modernity. Thus, the Transhumanist Declaration states that every human being should have the choice about whether to enhance their body and, if so, what enhancements to make.<sup>207</sup> However, in contrast with the modern era, the potential influence of personal autonomy is much more far-reaching in a world where there are radically invasive biomedical technologies. In their critique of transhumanist medical technologies, McNamee and Edwards have advised caution if there is no clear medical end to the application of a technology, stating that biomedical enhancements cannot simply be libertarian extensions of free choice and consumption.<sup>208</sup>

However, despite a number of common themes across transhumanism scholarship, More has rightly pointed out that the epistemology and metaphysics underlying transhumanist thought is mixed.<sup>209</sup> More argues that many transhumanists are materialists, in that they see the functions of the physical human body as the sum of all reality. He also states that many transhumanists are functionalists, who believe that human mental function constitutes the person, and must be instantiated in a physical medium, but not necessarily a biological one, hence the idea of morphological freedom and the espousal of mind-uploading by Kurzweil and Moravec. More states that transhumanists are committed to what he describes as *pan-critical realism* - they emphasise the importance of critical thinking, scientific method, empiricism and a willingness to revise foundational beliefs. He claims that transhumanists therefore do not adhere to *foundationalist* principles – knowledge axioms based on specific metaphysical or philosophical frameworks, or a priori commitments.

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<sup>207</sup> World Transhumanist Association, "Transhumanist Declaration", in *The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology and Philosophy of the Post-Human Future*, edited by Max More and Natasha Vita-More (Chichester: Wiley-Blackwell, 2013), pp. 54-55.

<sup>208</sup> McNamee and Edwards, "Transhumanism", p. 518.

<sup>209</sup> More, "Philosophy of Transhumanism", pp. 6-8.

However, this assertion of the sufficiency of enhancement as the means of human transformation might itself be regarded as a foundationalist principle.

Another area of variation among transhumanist scholars is their attitude to the risks associated with biomedical technologies. For example, on the one hand, Moravec provides a bold vision of a technologically enabled future whereas, on the other, Kurzweil provides a more considered analysis of the problems of human experience in such a world. Transhumanists are sometimes perceived as gung-ho technological optimists, as is suggested by Max More's slogan "No more gods, no more faith, no more timid holding back".<sup>210</sup> However, in fairness, some transhumanist sources acknowledge the risks of technology as well as proclaim the benefits. The Transhumanist Declaration, which was developed as a "mission statement" by the World Transhumanist Association in 1998, and was revised in 2002 and 2009, states that,

"we need to carefully deliberate how to reduce risks..." [of technology], and that "policy making ought to be guided by responsible...moral vision, taking seriously both opportunities and risks...."<sup>211</sup>

Both Bostrom and More state that transhumanists admit that technology can be misused.<sup>212</sup> Furthermore, Bostrom asserts that transhumanists condemn the use of technologies for any state-sponsored eugenics programmes, whether motivated by race, gender or any ideological purpose.<sup>213</sup> Bostrom's view is that human beings are valuable and that the development of transhumanism does not mean that humanity must forego its currently established values - which would include abhorrence of genocide.<sup>214</sup>

Another interesting area of variation among transhumanists concerns attitudes to religious beliefs. More states that, although acceptance of transhumanist principles does not rule out religious belief, there are very few Christians who

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<sup>210</sup> McNamee and Edwards, "Transhumanism", p. 513.

<sup>211</sup> World Transhumanism Association, "Transhumanist Declaration", pp. 54-55.

<sup>212</sup> Bostrom, "Transhumanist Values", p. 16; More, "Philosophy of Transhumanism", p. 14.

<sup>213</sup> Nick Bostrom, "A History of Transhuman Thought", *Journal of Evolution and Technology*, 14 (2005), p. 20.

<sup>214</sup> Bostrom, "Transhumanist Values", p. 6, p. 9.

are transhumanists.<sup>215</sup> Some of the points of conflict between transhumanism and Christianity will already be evident in this discussion and will be explored in greater detail later in this chapter. However, some transhumanist commentators have proposed positive points of contact between transhumanism and Christian faith. For example, Campbell and Walker argue that both transhumanism and religious faith offer a means of transcendence and perfectibility.<sup>216</sup> However, for Campbell and Walker, the transhumanist project is re-contextualising humanity in terms of technology. They argue that those who embrace transhumanist technologies have a theological mandate to do so as co-creators with God, referring to Philip Hefner's concept of humankind as a "created co-creator"<sup>217</sup> – i.e. created by God, yet sharing with God in other creative acts within the world. However, Campbell and Walker say, the use of technology to transform humanity should be limited by other theological parameters, such as embodiment and eschatology, and should be consistent with ethical principles, such as justice and respect. Campbell and Walker admit that, with transhumanism, attributes of personhood – embodiment and gender – are sacrificed in favour of biological attributes, such as strength, memory, and longevity.

Hopkins asserts that both transhumanism and religious faith are a reaction to an "animal account" of humanity - a view, he says, that only secular humanists are happy with.<sup>218</sup> Furthermore, exploring the link between the application of transhumanist technology and the *imago Dei*, the idea that humanity is created in the image of God, Garner states that both transhumanism and religious faith create social visions that engender hope for their adherents.<sup>219</sup> On the one hand, he argues that there is a disconnect between transhumanism and the

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<sup>215</sup> More, "Philosophy of Transhumanism", p. 8.

<sup>216</sup> Heidi Campbell and Mark Walker, "Religion and Transhumanism: Introducing a Conversation", *Journal of Evolution and Technology*, 14 (2005), p. i – xv.

<sup>217</sup> Philip Hefner, *The Human Factor: Evolution, Culture, and Religion* (Minneapolis: Fortress, 1993), pp. 255-277.

<sup>218</sup> Patrick Hopkins, "Transcending the Animal: How Transhumanism and Religion are and are not alike", *Journal of Evolution and Technology*, 14 (2005), pp. 13-28.

<sup>219</sup> Stephen Garner, "Transhumanism and Christian Social Concern", *Journal of Evolution and Technology*, 14 (2005), pp. 29-43.

*imago Dei*, because transhumanism, he claims, rejects species-ism, whereas (substantive) approaches to the *imago Dei* have often, in the past, been used to define humanity.<sup>220</sup> On the other hand, however, he argues that if human society does not embrace transformative biomedical technology, it will be rejecting the social transformation that is inherent in the concept of *imago Dei* (presumably in a relational, functional or eschatological view of the *imago Dei*, as will be discussed later in this chapter). Nevertheless, Garner correctly identifies that the *imago Dei* is relevant in both a Christian and a transhumanist social vision and this will be explored in greater depth, in a theological critique of transhumanism in respect of the *imago Dei* later in this chapter, and then in Chapter 5 in relation to the case studies.

More recently, Jeanine Thweatt Bates has engaged with Haraway's work on the cyborg and has explored the possibility of developing a theological "post-anthropology" that would be inclusive of the cyborg.<sup>221</sup> In her methodology, Thweatt Bates draws a sharp distinction between the cyborg and transhumanist technologies, such as mind uploading, stating that the cyborg is not a subset of transhumanism.<sup>222</sup> I disagree with her categorisation; the cyborg and mind-uploading both represent radical biomedical technologies, but with differing degrees of altered embodiment. Thweatt Bates' theological post-anthropology has several elements. She notes that the functional approach to the *imago Dei*, seen in Hefner's created co-creator concept, provides a helpful means of dialogue between theology and the concept of the cyborg.<sup>223</sup> She also notes the recent emergence of "body theology", in contrast to previous approaches to human nature which she claims have been dualistic and have deprecated the body. Body theology has been important in recent theological developments on gender and sexuality – and such an approach, she contends, is important in understanding the cyborg because it takes seriously the theological significance

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<sup>220</sup> Garner, "Transhumanism and Christian Social Concern", p. 32.

<sup>221</sup> Jeanine Thweatt Bates, *Cyborg Selves: A Theological Anthropology of the Post Human* (Burlington: Ashgate, 2012).

<sup>222</sup> Thweatt Bates, *Cyborg Selves*, p. 68.

<sup>223</sup> Thweatt Bates, *Cyborg Selves*, p. 143.



of bodily experiences.<sup>224</sup> Turning to the issue of hybridity, she examines the Garden of Eden account and notes that Adam and Eve were, in fact, both hybrids, consisting of material dust and spirit from God. In the light of the first humans' distinctive relationship with God, and the account of the Fall, she argues that, in the same way, cyborgs – who are hybrids – could, in a sense, have both relational capacity and moral agency.<sup>225</sup> Thweatt Bates concludes her cyborg theology with a Christological reflection exploring the potential of redemption for the cyborg.<sup>226</sup> She notes that Jesus, the divine-human hybrid, is a cyborg, and therefore represents the “ultimate” human. If this is the case, she argues, then Christ can still be a saviour in a future world of transhumanist technologies. While her observations are interesting, especially those concerning soteriology in scripture, all she seems to demonstrate is that cyborg nature can be accounted for theologically using “body theology”, and that hybridity is common in a material world (something that Elaine Graham has already observed).<sup>227</sup> In my view, Thweatt Bates' cyborg theology may provide some grounds for theological inclusion of cyborgs in humanity, but it does not provide any ethical basis for adopting cybernetic enhancements and will not contribute to a discussion about what good ethical ends are for humanity in a technological world, in a way this thesis seeks to do.

Although these scholars have sought to find common ground between transhumanism and religion, many of the parallels identified by Campbell and Walker, and Garner – for example, concerning personal transcendence, perfectibility and a vision for the improvement of society – are, in my view, at a superficial level only; closer inspection of the values of transhumanism show significant divergences from Christian theological ethics, especially concerning the areas of autonomy, nature, embodiment and the *imago Dei*, and these will be discussed later in the chapter.

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<sup>224</sup> Thweatt Bates, *Cyborg Selves*, p. 149.

<sup>225</sup> Thweatt Bates, *Cyborg Selves*, p. 172.

<sup>226</sup> Thweatt Bates, *Cyborg Selves*, p. 175.

<sup>227</sup> Graham, *In Whose Image*, pp. 56-69.

Much discussion of future transhumanist technology is concerned with enhancement – the application of biomedical technologies not primarily to heal the human being of disease or disorder, as has been done in the past, but to enhance the human being, to extend their function, cognition and longevity. Consequently, a definition of what constitutes a biomedical enhancement will be helpful in assessing both proposed transhumanist developments and past therapeutic case studies. The next section will therefore provide a definition of an enhancement, and a discussion about the moral status of enhancements.

## 2.6. What is an Enhancement?

Transhumanist thinkers Chan and Harris define an enhancement as “a procedure that improves our functioning; any intervention that increases our general capabilities for human flourishing.”<sup>228</sup>

However, the definition of “enhancement” requires some exploration. The *prima facie* approach is to say that a treatment is an intervention that restores normal function in a person who is ill (dysfunctional), whereas an enhancement is something that gives a healthy person additional function and makes them “better than well”. Shapiro, however, argues that there are many things which could be considered enhancements at present – for example, drinking caffeine to improve alertness - but they are not perceived as enhancements, because they are already accepted by society.<sup>229</sup> Shapiro points out that a “disorder context” needs to be present for a technological intervention to be perceived as an enhancement – in other words, it may not be clear that an intervention is an enhancement, unless the context of the intervention is medicine or healthcare. For example, consumption of caffeinated drinks may be considered a means of enhancing mental function, but as it is an occurrence in everyday life, rather

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<sup>228</sup> See Ronald Bailey, “For Enhancing People”, in *The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology and Philosophy of the Post-Human Future*, edited by Max More and Natasha Vita-More (Chichester: Wiley-Blackwell, 2013) pp. 327-344.

<sup>229</sup> Michael Shapiro, “Performance Enhancement and Legal Theory”, in *The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology and Philosophy of the Post-Human Future*, edited by Max More and Natasha Vita-More (Chichester: Wiley-Blackwell, 2013), pp. 281-283.

than only in the context of a healthcare service, it is not perceived as an enhancement.

Furthermore, the line between a treatment and an enhancement is sometimes an indistinct one. Brent Waters argues that a therapy given to an eighty-year old with heart failure that restores their cardiac function to that of a healthy eighty-year old would be regarded as a treatment, but if the person responded very well to this therapy and cardiac function improved to that expected in a healthy forty-year old, the therapy would be considered an enhancement.<sup>230</sup> Shapiro also notes that the ethical doctrine of double effect can apply with treatments and enhancements; a steroid can be taken with the intention of treating a bad knee, but have the unintentional “side-effect” of building muscles.<sup>231</sup> Enhancements are therefore relative; while Bailey suggests that only enhancements that take a person well beyond normal human functioning are interesting,<sup>232</sup> Kahane and Savulescu take the view that even modest enhancements can be of ethical and social significance.<sup>233</sup>

The other consideration is how “natural” the enhancement appears to be. Shapiro observes that it is common to classify a therapy as “natural” and an enhancement as “un-natural”.<sup>234</sup> However, he argues, this is unhelpful because the link between nature and moral status is flawed, and natural law cannot apply universally. He gives the example that it is not, in fact, natural for humans to wear clothes, but it is certainly traditional for them to do so. However, he concedes that the question of how natural an enhancement is, provides a useful entry-point to the discussion. Hopkins argues that natural law advocates are often the most vociferous opponents of enhancements, but that their objections are not to technology *per se*, but to the anti-essentialist views of humanity often

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<sup>230</sup> Brent Waters, “Saving Us from Ourselves: Christology, Anthropology and the Seduction of Posthuman Medicine”, in *Future Perfect?: God, Medicine and Human Identity*, edited by Celia Deane-Drummond and Peter Manley Scott, (London: T and T Clark International, 2006) pp. 183-195.

<sup>231</sup> Shapiro, “Performance Enhancement”, pp. 281-284.

<sup>232</sup> Bailey, “For Enhancing People”, p. 327.

<sup>233</sup> Guy Kahane, Julian Savulescu, “Normal Human Variation: Refocussing the Enhancement Debate”, *Bioethics*, 29 (2015), pp. 133-143.

<sup>234</sup> Shapiro, “Performance Enhancement”, pp. 281-283.

seen in the social sciences.<sup>235</sup> He asserts that most advocates of enhancement agree that there is a biologically-grounded human nature – otherwise, the concept of enhancement would be meaningless as there would be no “basic” humanity to be enhanced. The significance of nature and natural law in the ethical evaluation of both past biomedical therapies and proposed future biomedical enhancements is a major theme in this thesis and will be explored at length later in this chapter and in Chapter 5.

### 2.7. The Moral Status of Enhancements

If operating from the principle of natural law – i.e. asking how natural a proposed enhancement is - is an unhelpful way of ascertaining an enhancement’s moral status, how can the morality of an enhancement be adequately determined? The fact that enhancements may be relative – what is an enhancement for one person is a treatment for another (see Waters’ argument about cardiac function above) - suggests that the moral status of an enhancement is predicated on social factors, rather than simply on individual biological dysfunction.

Where a person has a disease, which prevents them functioning normally in society, then a just and humane society has a moral obligation to offer a treatment via its health service. Correspondingly, if they are a good citizen, the person who is ill arguably has some moral obligation to avail themselves of the treatment (notwithstanding any extenuating factors concerning the person’s circumstances and the nature of the treatment) so as not to be a burden to the health service and to society in general. For an enhancement – a biomedical procedure that increases a person’s function to greater than normal - the moral framework is slightly different. Society does not have a moral obligation to provide enhancements to normally functioning individuals, in the same way that it has a moral obligation to provide treatments to dysfunctional individuals.

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<sup>235</sup> Patrick Hopkins, “Is Enhancement worthy of being a right?”, in *The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology and Philosophy of the Post-Human Future*, edited by Max More and Natasha Vita-More (Chichester: Wiley-Blackwell, 2013), p. 351.

Furthermore, an individual who is functioning normally in society does not necessarily have a moral obligation to seek enhancement.

However, if the baseline for normative human function in society were higher – for example, if a particular enhancement was used universally in society to provide an increased level of function in some way – then there would be an obligation for society to provide the enhancement for all citizens. Consequently, ter Meulen rightly argues that any discourse about enhancement should be considered in terms of societal goals and within the context of human rights.<sup>236</sup> This approach is certainly consistent with the increasing importance of human rights in medical ethics in the late 20<sup>th</sup> century, as described in Chapter 1. Moreover, Wolbring suggests the possibility of discussing enhancements outside of the framework of health and disease. He suggests that assessments of human abilities should be developed to determine able-ism, rather than diagnose disease and assess disability and that the concepts of able-ism and ability should be used as objective tests for the need for enhancement.<sup>237</sup>

If, as argued here, the difference between “treatment” and “enhancement” is not always clear when a medical technology is being used in practice, then the fairest ethical position for a society is to deploy a biomedical technology to ensure that all citizens meet the same standard of ability, regardless of whether the technology should be defined as a treatment or an enhancement. In this scenario, the state does have a moral duty to provide biomedical “enhancement” technologies on the principle of citizen equity, to ensure that all citizens can achieve the same standard of function and wellbeing. Furthermore, in this scenario, citizens may have a moral obligation to avail themselves of the biomedical technology, on the principle of participation in a democratic society where equality is valued. I conclude therefore that there is a moral imperative

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<sup>236</sup> Ruud ter Meulen, “Human Enhancement: A Policy Perspective for the European Union”, in *Human Enhancement: Scientific, Ethical and Theological Aspects from a European Perspective*, edited by Theo Boer and Richard Fischer. Church and Society Commission of CEC (2013), pp. 9-12.

<sup>237</sup> Gregor Wolbring, “Nanotechnology and the Transhumanization of Health, Medicine, and Rehabilitation”, *Controversies in Science and Technology*, 3 (2010), pp. 290-303.

for the use of biomedical technology by a society to benefit human health and wellbeing, irrespective of whether the technology is considered a treatment or an enhancement.

In theory, in a just society, access to enhancements should be possible either for all citizens equitably, or for no citizens. In practice, however, technologies become available and are marketed by the corporations that invent them, so what is needed is a regulatory system that enables fair access to enhancements by the citizens who need them most, according to transparent, objective and verifiable criteria.

## 2.8. Transhumanist Technologies

A diverse range of emerging and potential future technologies have been considered transhumanist by advocates of the transhumanism movement. Many of these proposed technologies may be radical in their effects on the human body, or highly invasive in nature. Some of the technologies are not scientifically possible at the time of writing but have been envisaged by some science fiction writers, as previously discussed, and because of their potential effects on human life are of interest in any case as ethical case studies.

The proposed technologies that could be considered transhumanist include:

- 1) Nanotechnology – the use of microscopic particles, tools and robots to interact with the body for medical applications. Freitas has discussed nanotechnology in detail, from a transhumanist perspective.<sup>238</sup>
- 2) Genetic enhancements – including germ-line modifications. The potential applications of genetic enhancements have been discussed by Bailey.<sup>239</sup>
- 3) Cybernetics – the use of prostheses and robotics to develop and enhance bodily function. There has been much philosophical and ethical

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<sup>238</sup> Freitas, “Future of Medicine”, pp. 67-72.

<sup>239</sup> Bailey, “For Enhancing People”, pp. 327-344.

debate about the cyborg and what it says about human nature and the human person.<sup>240</sup>

- 4) Cryonics – placing the human body in suspended animation using cryogenic techniques, so that a person can be revived in the distant future when radical new medical technologies are available.
- 5) Mind Uploading – where all the information in the human brain is uploaded onto a computer, in order that a person can live on “in silico” without the biological substrate of the frail human body.<sup>241</sup>

These technologies are listed above in order, beginning with those that are available now in the early 21<sup>st</sup> century, or that will be available soon, and ending with those that are more distant prospects. This list is not exhaustive, but these are the technologies which will be considered in some detail in this thesis, both in this chapter and in the reflective evaluation in Chapter 5.

Pharmaceutical advances – for example, drugs that significantly enhance cognition, improve mental function and delay aging – might also be considered transhumanist technologies. The research question that this thesis addresses is whether some significant developments in pharmaceutical medicine to date can be regarded as transhumanist, and whether the ethical issues with these previous developments modify an ethical analysis of future transhumanist developments.

McNamee and Edwards describe the positive aspects of transhumanism.<sup>242</sup> First, they argue that technology (a product of modernity, as described previously) is already being used to improve human life – for example, drainage and sewerage systems, drug therapy and computers – and that transhumanist technologies are, in a sense, no more than extensions and advances on the

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<sup>240</sup> Hayles, *Virtual Bodies*, pp. 2-5; Haraway, *Simians, Cyborgs and Women*, pp. 149-152.

<sup>241</sup> Ralph Merkle, “Uploading”, in *The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology and Philosophy of the Post-Human Future*, edited by Max More and Natasha Vita-More (Chichester: Wiley-Blackwell, 2013), pp. 157-164.

<sup>242</sup> McNamee and Edwards, “Transhumanism”, p. 514.

technologies already in use. Second, they argue that technological advances give humanity the opportunity to make positive future plans, and to proactively deal with risks to human life. Third, they state that because, with transhumanism, moral status is bound to intellectual capacity and not human embodiment or species membership, it is a fairer way of addressing the natural variations of bodily function that occur in human life. However, this third claim is highly debatable in terms of Christian ethics because, by focusing moral status on intellectual capacity, it calls into question the human status of those who have learning disabilities or who in some other way lack intellectual capacity.

### 2.9. Criteria for Transhumanist Developments

Given the range of potential technologies that could be described as transhumanist, and the differing worldviews of the advocates of the transhumanist movement, there is a need to define objective criteria for what constitutes a transhumanist biomedical technology. Such criteria will enable detailed critical engagement with transhumanism as a movement. They will also enable evaluation of previous therapeutic technologies to determine whether, in their time, they were transhumanist in character, a key objective of this thesis.

As mentioned previously, the criteria for a transhumanist technological intervention, as defined by the transhumanist literature, are very broad and wide-ranging. In summary, the key principles seem to be as follows:

- 1) That it is a technology – in other words, it is a material means of effecting a task or process.<sup>243</sup> This, of course, will include any physical or chemical effect or intervention – including pharmacological therapeutics - but may also include processes, policies and organisational methods. Bostrom notes that technology does not just include gadgets but “all instrumentally useful objects and systems that have been deliberately created.”<sup>244</sup>

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<sup>243</sup> More, “Philosophy of Transhumanism”, p. 13

<sup>244</sup> Bostrom, “Transhumanist Values”, p. 1.



- 2) That the technology is applied to a human person in some way. Article 1 of the 1998 Transhumanist Declaration states that “Humanity will be radically changed by technology in the future.”<sup>245</sup> In addition, More argues that transhumanism is not just about using education or culture to improve the human condition, but using technology to change it.<sup>246</sup> At the core of transhumanism is the transformation of human life and experience, and the improvement of human society. This would therefore exclude, for example, computer programmes that make mathematical models of chemical structures because, although they are a technology, their use cannot directly manipulate human life and experience.
- 3) That the technology is applied to the human person to improve human function, increase longevity or promote human flourishing. Article 4 of the 1998 Transhumanist Declaration states that, “Transhumanists advocate the moral right to extend their mental and physical...capacities.”<sup>247</sup> Bostrom claims that, “Transhumanists hope that by responsible use of science and technology...we shall eventually manage to become post-human beings, with vastly greater capacities than present human beings have.”<sup>248</sup> Bailey simply claims that “enhancements will enable people to flourish.”<sup>249</sup>
- 4) That the human person has autonomy in the use of the technology – in other words, the technology is applied in a self-determined way and not in a coercive way.<sup>250</sup> Bostrom states that “transhumanists typically place emphasis on individual freedom and individual choice in the area of enhancement technologies.”<sup>251</sup> MacNamee and Edwards also note that

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<sup>245</sup> World Transhumanism Association, “Transhumanist Declaration”, pp. 54-55.

<sup>246</sup> More, “Philosophy of Transhumanism”, p. 6

<sup>247</sup> World Transhumanism Association, “Transhumanist Declaration”, pp. 54-55.

<sup>248</sup> Bostrom, “Transhumanist Values”, p. 1.

<sup>249</sup> Ronald Bailey, “For Enhancing People”, pp. 327-328.

<sup>250</sup> More, “Philosophy of Transhumanism”, p. 13.

<sup>251</sup> Bostrom, Transhumanist Values, p.1.

transhumanists advocate free choice and that this perhaps reflects the western free market economy.<sup>252</sup>

According to these criteria, a wide range of biomedical technologies could be classified as transhumanist in character. However, some of the technologies already listed would, if implemented, clearly have a significant impact on human life, especially in the light of a Christian understanding of human life and flourishing.

Consequently, although some potential positive features of proposed transhumanist technologies have been described, unsurprisingly there have also been various ethical and theological critiques of transhumanism. I will now discuss these critiques in detail, and then go on to describe more specific, theological criteria for the evaluation of transhumanist technologies, which help to make an assessment of the technologies in the light of these criticisms.

#### 2.10. Criticisms of Transhumanism

As shown in the previous sections, transhumanism is a diffuse movement, and approaches to transhumanism have been varied in their epistemic basis, their socio-political objectives and their attitudes to technology.<sup>253</sup> Perhaps because of this, criticisms of transhumanism over the years have been equally varied, emanating from bioethicists, social theorists, philosophers and, not least, theologians. These criticisms have focused on the following areas:

- a) social ethical and justice issues arising from the economic impact of widespread immortality, or at least significant increases in longevity, due to transhumanist biomedical technologies;
- b) the effects of transhumanist technologies on personal autonomy and the risk of oppression in society due to effects of enhancement technologies on individual autonomy;
- c) the extent to which transhumanist biomedical technologies are contrary to nature and natural law;

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<sup>252</sup> McNamee and Edwards, "Transhumanism", p. 514.

<sup>253</sup> McNamee and Edwards, "Transhumanism", pp. 513-518.

- d) the challenge of transhumanist biomedical technologies to the notion of embodiment, and the importance of embodiment from a Christian perspective;
- e) the implications of transhumanism for the *imago Dei*, the doctrine that human beings are made in the image of God and in particular, the criticism that transhumanism provides an alternative eschatology.

### 2.10.1. Transhumanism & Social Justice

Many commentators have urged caution about the transhumanist project from the perspective of social ethics, and they have been labelled - rather pejoratively - as “bio-conservatives” by advocates of transhumanism.<sup>254</sup>

Francis Fukuyama, a social philosopher, has famously dismissed transhumanism as “the world’s most dangerous idea” because, in his view, it eliminates any notion of a “human essence” and thereby undermines any defence of legal and political equality of human beings based on a common understanding of humanity.<sup>255</sup> This idea of a human essence, or an essential human nature, has been important in Christian theology in the past, in the scholastic natural law tradition, and also in substantive approaches to the doctrine of *imago Dei*, which have sought to understand what specific human attributes the *imago Dei* consists in. Both these will be discussed in later sections of this chapter.

Leon Kass, Chair of the US President’s Council for Bioethics from 2001 to 2005, has warned of the possible social and ethical consequences of extended life, saying that “Finitude is a blessing for everyone, whether he knows it or not”.<sup>256</sup> Similarly, Stock and Callaghan have stated that “no social good will come from the conquest of death” and, in a pointed critique of the transhumanist principle

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<sup>254</sup> The problems of bio-conservatism, compared to biotechnological libertarianism, are explored in Chapters 5 and 6.

<sup>255</sup> Francis Fukuyama, *Our Posthuman Future: Consequences of the Biotechnology Revolution* (New York: Farrar, Strauss and Giroux, 2002), p. 149.

<sup>256</sup> Leon Kass, "L'Chaim and its limits: why not immortality?", *First Things*, (2001), pp. 17-24.

of free exercise of personal autonomy, he added “and the worst possible way to resolve the question of life extension is to leave it to individual choice”.<sup>257</sup>

There are various possible social consequences of increased longevity.<sup>258</sup> These include a glut of able-bodied people, with increasing numbers of older people in society, a consequent loss of innovation in society (because this is often driven by generational change), increased pressure on marriage as a means of emotional support for each partner, and on monogamy as a way of life. All these are valid concerns, which are already being observed to an extent in western society because of increasing longevity due to the availability of increasingly sophisticated medical techniques. These factors relating to longevity are likely to have an impact on personal relationships, the workplace and social care and welfare.

In fact, theologian Celia Deane-Drummond argues that human finitude is a positive good of life.<sup>259</sup> She asserts that, where individual choice and consent are elevated as ethical norms, immortality is inappropriately privatised.<sup>260</sup> Furthermore, while human perfectibility is seen by some transhumanists as a shared goal between transhumanism and religious belief (see, for example, Campbell and Walker,<sup>261</sup> as discussed), Deane-Drummond argues that, in the western Christian tradition, perfectibility is only possible in union with God in the next world.<sup>262</sup> She concludes that, in this world, a Christian vision of perfection

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<sup>257</sup> Gregory Stock and Daniel Callahan, “Debates: Point-Counterpoint: Would Doubling the Human Life Span Be a Net Positive?” *Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 59 (2004), pp. B554–B559.

<sup>258</sup> Bailey, “For Enhancing People”, pp. 327-344.

<sup>259</sup> Bernard Williams has argued philosophically, from human experience and desire that, even if immortality were conceivable, it would be intolerable. See Bernard Williams, “The Makropulos Case: Reflections on the Tedium of Immortality”, in *Problems of the Self: Philosophical Papers – 1956-1972*, (Cambridge: Cambridge University Press, 1973), pp. 82-100.

<sup>260</sup> Celia Deane-Drummond, “Future Perfect? God, the Transhuman Future and the Quest for Immortality”, in *Future Perfect? God, Medicine and Human Identity*, edited by Celia Deane-Drummond and Peter Manley Scott (London: T&T Clark International, 2006), pp. 168-182.

<sup>261</sup> Campbell and Walker, “Religion and Transhumanism”, pp. i – xv.

<sup>262</sup> Celia Deane-Drummond, “Future Perfect? God, the Transhuman Future and the Quest for Immortality”, in *Future Perfect? God, Medicine and Human*

must find a focus in good medical and bioethical decision-making, if it is to avoid anti-materialist Gnosticism.<sup>263</sup>

Furthermore, theological ethicist Brent Waters has argued that, ultimately, human finitude and medical care are opposed.<sup>264</sup> A human being will die and, as a means of preventing death, medical therapy will always be ultimately thwarted. The proper ethical end of medical care, he argues, is in the alleviation of suffering and the care of the vulnerable person. Waters concludes that Christians should place their hope in the resurrection of the body of Christian theology, not the immortality of the soul that transhumanism offers. The former, he claims, completes and fulfils creation, while the latter ultimately rejects it. The former is true to nature, while the latter negates nature.

Another significant objection to the transhumanist project, voiced by both bioethicists,<sup>265</sup> and theologians,<sup>266</sup> is that transhumanist enhancements will lead to social inequality, injustice and even oppression, due to the socioeconomic differences between the enhanced and the unenhanced in society. Again, these are valid concerns, albeit ones that can be offset by wise public policy and good regulation of technology. In reply to this, Bailey has argued that there are many instances where political and moral equality have not rested on biological equality in the past, citing social systems in history, such as feudalism and slavery.<sup>267</sup> However, these past social inequalities are not a good reason for perpetuating social injustice in the future through inequitable biological enhancement.

As well as the ethical consequences of transhumanist technologies for society, the ethical consequences for the individual have also been debated. Of

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*Identity*, edited by Celia Deane-Drummond and Peter Manley Scott (London: T and T Clark International, 2006) pp. 168-182.

<sup>263</sup> Deane-Drummond, "Future Perfect?" p. 178.

<sup>264</sup> Brent Waters, "Saving Us from Ourselves: Christology, Anthropology and the Seduction of Posthuman Medicine", in *Future Perfect?: God, Medicine and Human Identity*, edited by Celia Deane-Drummond and Peter Manley Scott (London: T and T Clark International, 2006) p. 194.

<sup>265</sup> McNamee and Edwards, "Transhumanism", pp. 513-518.

<sup>266</sup> Deane-Drummond, "Future Perfect?" p. 182.

<sup>267</sup> Bailey, "For Enhancing People", p. 338.

particular importance is the issue of personal autonomy and how it is exercised, which has been a key feature of medical ethics to date. This will be explored in the next section.

### 2.10.2. Transhumanism and Autonomy

As already indicated, the use of transhumanist biomedical technologies raises significant questions concerning the exercise of personal autonomy. A stated aim of the transhumanist movement, as described earlier, is that individuals who are seeking biomedical enhancement can choose to use the biomedical technology, or not, autonomously, as a matter of free, personal choice. The corresponding theological response to this, raised by Elaine Graham, is that transhumanist biomedical technologies therefore are problematic because they enable unbridled autonomy in a negative manner.<sup>268</sup> This section will therefore define autonomy, examine in detail the concept of personal autonomy and describe the possible effects of biomedical technologies on autonomy.

The notion of personal autonomy has become the standard of participation in the healthcare system, from the perspective of the recipient of care, and a central concept of modern medical ethics. Autonomy is one of the Four Principles of medical ethics described by Beauchamp and Childress in 1979,<sup>269</sup> along with beneficence, non-maleficence and justice. The exercise of autonomy is essentially about an agent's capacity for self-government and may be defined as "to be one's own person, to be directed by considerations, desires, conditions and characteristics that are not simply imposed externally upon one but are part of what can somehow be considered one's authentic self."<sup>270</sup> |

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<sup>268</sup> Elaine Graham, "In Whose Image? Representations of Technology and the Ends of Humanity" in *Future Perfect? God, Medicine and Human Identity*, edited by Celia Deane-Drummond and Peter Manley Scott (London: T and T Clark International, 2006), pp. 58-61.

<sup>269</sup> Thomas Beauchamp, "The 'Four Principles' Approach to Health Care Ethics", in *Principles of Health Care Ethics*, edited by Richard Ashcroft, Angus Dawson, Heather Draper and John McMillan (Chichester: Wiley, 2007), pp. 3-10.

<sup>270</sup> John Christman, "Autonomy in Moral and Political Philosophy", *Stanford Encyclopaedia of Philosophy*, 2015, <https://plato.stanford.edu/entries/autonomy-moral/> (accessed April 2019).

have chosen this particular definition as it is general in context, worded in non-technical language and yet is sufficiently nuanced to take to account different aspects of personal autonomy.

The concept of autonomy as self-government, or self-rule, appears to be in tension with the Christian belief that God is sovereign over all creation and that humans are invited to live under his kingly rule (e.g. Psalm 95v3-7, Isaiah 43v15). Furthermore, the modern notion of autonomy has come from secular origins, in the thought of Immanuel Kant and J.S. Mill, whom I will discuss later in this section. As a result, Christian ethicists have expressed caution about autonomy. Oliver O'Donovan notes that, while liberal political thought has been a feature of western society for a long time, the use of medical technologies on the otherwise healthy body has highlighted the problem of unhindered personal autonomy in the healthcare context.<sup>271</sup> With reference to abortion, O'Donovan succinctly summarises the situation: "The freedom of self-determination which was accorded to the mother was won at the cost of the physician's freedom". Neil Messer, too, has critiqued autonomy as a factor in biomedical decision-making.<sup>272</sup> He notes, correctly, that there are limits to the goodness of autonomy. Autonomy might be in tension with beneficence – for example, when a person chooses to refuse a life-saving treatment. Messer is also sceptical about the conditions for true personal autonomy.

It might seem inappropriate, then, that the exercise of autonomy should be a criterion in a Christian ethical evaluation of biomedical technologies. However, I would argue that self-determination is a necessary pre-requisite to the exercise of Christian moral responsibility. Personal autonomy is not necessarily in opposition to divine sovereignty, because the scope of human actions is ultimately limited in comparison that of God's actions. The idea that God gives humanity limited autonomy – for example, naming the animals – as a gift is seen in Genesis 2-3. Furthermore, although autonomy may not appear to be a

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<sup>271</sup> O' Donovan, *Begotten, or Made?* pp. 6-7.

<sup>272</sup> Neil Messer, "Bioethics and Practical Theology: The Example of Reproductive Medicine." *International Journal of Practical Theology* 21 (2017): pp. 291-314.

Christian concept, freedom certainly is. The New Testament emphasises the concept of personal freedom in Christ, through the work of the Holy Spirit (see 2 Corinthians 3v17 and Galatians 5v13-26). This freedom would not be possible - or valuable - if a person were unable to choose it because their ability to exercise self-determined choice was limited by other factors.

Consequently, I contend that personal autonomy – the ability to make a self-determined decision – is not incompatible with a Christian understanding of divine authority and is a necessary prerequisite to being able to exercise moral agency of any type, which would include Christian moral responsibility. The functional approach to the *imago Dei* – which I will discuss later in this chapter – holds that humans display the image of God because of their function – their role and vocation in the world - implies that a person must make ethical decisions about their actions in the world to fulfil their vocation. For this to be possible, the person would need a degree of autonomy. Indeed, Christian moral responsibility and personal autonomy can be seen as part of the process of Christian ethical action in the world. Moral responsibility provides the motivation for ethical action, and personal autonomy provides the ability for ethical action.

As stated earlier, the idea of autonomy as a factor in a Christian ethical study of transhumanist biomedical technologies may be particularly problematic given the associations of transhumanism with modernity. However, the concept of autonomy is important in contemporary medicine, and discussion of autonomy in relation to future biomedical technologies will ensure that ethical issues about such technologies are intelligible from the perspective of contemporary bioethics as well as from theological ethics.

Autonomy is concerned with self-determination and, in his recent defence of a theistic basis for moral decision making, Keith Ward states that, “humans are free agents who (partly) self-determine their acts by reason” and that self-determining moral agents have causal power.<sup>273</sup> However, an important factor in personal autonomy is the extent to which self-government is affected by

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<sup>273</sup> Keith Ward, *Morality, Autonomy and God* (London: Oneworld, 2013), p. xi.



factors that are external to the person. An externalist view of autonomy will acknowledge that a person's motivation to act is in response to a wide range of arguably external factors.<sup>274</sup> These may be coercive socio-political pressures which are clearly external, or the constraints of acting in someone else's best interest, which is an external factor, yet with internal causation, because of the emotional commitment to the act. These are factors that, for example, may influence a woman's choice to take the contraceptive pill; there may be social pressures to do so, or she may feel that she is acting in the best interests of her partner or family by doing so.

A complicating factor with understanding autonomy is that it is difficult to distinguish empowering and coercive factors that arise from within the person, and their effects on self-government.<sup>275</sup> At the most basic level, an agent who can make a decision has the authority to determine how he or she will act (if at all) in response to the decision, regardless of the external factors that may have contributed to it. The person's motivation to act may be aligned with, or coherent with, the person's character as a moral agent, or it may not.

According to a coherentist account of autonomy, an act is autonomous if it is coherent with the values, motives and desires that arise from the character of the person, as a moral agent. However, even if the person's motivation is coherent with their desires or wishes, this does not necessarily mean that the decision is made in a truly autonomous way. For example, according to a coherentist view, a drug addict's decision to take an addictive drug may be classed as autonomous because their action is aligned with their desires (their craving of the drug), but it cannot be regarded as truly autonomous because of the addictive nature of drug use. Drug addiction and brain washing are two scenarios cited in philosophical literature as being problematic to the concept of personal autonomy.<sup>276</sup> Both these scenarios are clearly relevant with the use of

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<sup>274</sup> Sarah Buss, "Personal Autonomy", *Stanford Encyclopaedia of Philosophy*, 2018, <https://plato.stanford.edu/entries/personal-autonomy/> (accessed April 2018). April 2018.

<sup>275</sup> Buss, "Personal Autonomy".

<sup>276</sup> Buss, "Personal Autonomy".

psychopharmacological agents and will be explored further in Chapter 4, in relation to the case study of SSRI antidepressants.

Before any further consideration of the effects of biomedical technologies on autonomy, it is worth considering the nature of personal autonomy in the context of healthcare provision. In a medical context, personal autonomy is demonstrated when a person can give informed, explicit and non-coerced consent for a medical intervention.

Saad has provided a concise review of the development of autonomy in modern medicine, from its origins in the Hippocratic tradition, through its development as a modern concept in the Enlightenment thought of Rousseau and Kant, to its primacy in contemporary medical ethics.<sup>277</sup> While the survey of the history of medical ethics in Chapter 1 of this thesis suggests that the Hippocratic tradition was concerned primarily with the actions and motivations of the practitioner rather than the autonomy of the subject, Saad argues persuasively that the dominance of paternalism in ancient medical practice is a caricature and that the concept of autonomy was in fact present in the Hippocratic code, but simply not made explicit. She argues that the idea of autonomy has been made explicit in the Enlightenment era through new ways of expressing morality independently of religious revelation. She describes two Enlightenment views of autonomy; Rousseau's vision of autonomy as a personal, rational attribute, rather than a political one, where morality is worked out by social contract, and Kant's view, where morality can be discerned from within, objectively deduced from a universal moral law (the categorical imperative). She then charts the establishment of the concept of autonomy in modern bioethics, in the work of Paul Ramsey,<sup>278</sup> and Beauchamp.<sup>279</sup>

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<sup>277</sup> Toni Saad, "The History of Autonomy in Medicine from Antiquity to Principlism", *Medicine, Health Care and Philosophy*, 21 (2018), pp. 125-137.

<sup>278</sup> Paul Ramsey, *The Patient as Person* (Newhaven: Yale University Press, 1970).

<sup>279</sup> Beauchamp, "The 'Four Principles' Approach", pp. 3-10.

As well as Rousseau and Kant, another key figure in the development of the modern idea of autonomy was John Stuart Mill. In his great work, "On Liberty", Mill described the nature of individual liberty in relation to authority, and this included the freedom of thought and emotion, and the freedom to act on those thoughts.<sup>280</sup> Gillon notes that, for Mill, personal autonomy was important on utilitarian grounds, as the means by which the outcome of the greatest good for the greatest number could be safeguarded.<sup>281</sup> The flaw in this argument, however, is that, according to a consequentialist view, personal autonomy will only contribute to an overall good consequence if the majority of people have the freedom to act in a manner that will lead to a good outcome for the greatest number. However, if personal autonomy is a good in its own right, then it is a good thing for an individual to have autonomy, and indeed for as many people as possible in a society to have autonomy, regardless of the consequential impact on society as a whole. Indeed, if autonomy is not an innate good then the greatest good for the greatest number in society would be better served by no-one in society having personal autonomy – i.e. a totalitarian state.

This account of the history of autonomy is consistent with the claim that transhumanism, with its emphasis on radical personal autonomy in the application of enhancement technologies, is a natural development from Enlightenment liberal humanism.<sup>282</sup>

Saad notes three important characteristics of autonomy as described by modern bioethics:

- a) Choices made by autonomous subjects in modern healthcare scenarios may not be inherently moral choices.
- b) Autonomy in the modern healthcare context is often individualistic in nature, about the wishes of the individual, and does not reflect society's

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<sup>280</sup> John Stuart Mill, "On Liberty" in *John Stuart Mill: A Selection of his Works* (London: Palgrave, 1966). pp. 21-22.

<sup>281</sup> Raanan Gillon, "Autonomy and the Principle of Respect for Autonomy." *British Medical Journal*, 209 (1985): pp. 1806-1808.

<sup>282</sup> Bostrom, "A History of Transhumanist Thought", p. 4.

response. She notes that the duty derived from personal autonomy is, in fact, the duty of others (healthcare practitioners) to respect the subject's person's autonomy.

c) The sanctity of choice and the principle of non-interference in that choice.

This introduces the issue of the role of relationships in the autonomy of an individual. As mentioned previously, when understanding autonomy, it is hard to distinguish internal motivational – or demotivational – factors, from external reinforcement or coercion factors. However, commentators have rightly pointed out the deficiency of ethical decision-making based on considerations of autonomy alone, expressed in the medical context as informed consent, as an enabler of human flourishing. In his paper, *Sick Autonomy*, Tauber argues that autonomy is not an individualistic tool for protecting threatened identity, as it is often perceived in the lived experience of practitioners in the modern healthcare context; rather, it should form part of a wider morality of relationships and care.<sup>283</sup> He rightly concludes that a broader approach to autonomy helps bioethics to balance concerns about actions and decisions with wider issues of relationships and responsibilities. Stoljar notes that informed consent, in its medical context, is insufficient for autonomy if relationships are taken into account.<sup>284</sup> She argues – correctly, in my view, given the way that informed consent operates in the real-world healthcare context – that informed consent simply requires the health professional to seek an opportunity for the patient to give permission, whereas true autonomy is developed in the context of a wider relationship, a relationship which is not restricted to the individual clinical encounter, where the practitioner seeks permission and the patient simply gives it. Sandman argues that a relational approach in healthcare is more complicated for the healthcare practitioner.<sup>285</sup> He contends that a paternalistic relationship between patient and practitioner is easy to determine, as it is about compliance

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<sup>283</sup> Alfred Tauber, "Sick autonomy", *Perspectives in Biology and Medicine*, 46 (2003), pp. 484-495.

<sup>284</sup> Natalie Stoljar. "Informed consent and relational conceptions of autonomy", *Journal of Medicine and Philosophy*, 36 (2011), pp. 375-384.

<sup>285</sup> Lars Sandman, Bradi B. Granger, Inger Ekman and Christian Munthe, "Adherence, shared decision-making and patient autonomy", *Medicine, Health Care and Philosophy*, 15 (2012), pp. 115-127.

by the patient, but a more relational approach to the therapeutic relationship involves adherence and concordance, requires negotiation and is much harder for either party to determine.

This reduction of personal autonomy to the process of informed consent in medicine and healthcare has wider political implications. Onora O'Neill has argued that public trust in science and medicine has declined, despite efforts to respect persons and to promote autonomy in society.<sup>286</sup> She contends that this is due to self-interest on the part of various stakeholders, such as the medical profession, politicians and the healthcare industries and that, with the increasing emphasis on personal autonomy across society, the autonomy of the powerful increases as well as, if not more than, that of the less powerful and marginalised. She notes that debate, especially on social media, about new medical procedures is shrill, and there appears to be a widespread culture of blame in society concerning medical errors, even though the risks of medicine are no greater than in earlier generations. O'Neill concludes that this decline of public trust in medicine is partly because scientific education of the public is lacking, and partly because doctors and scientists do not always communicate in an accessible way. She also notes that the contemporary team approach to healthcare undermines trust, because the patient is unable to develop a relationship with a single practitioner. I would challenge O'Neill's observation about the risks of medicine; in my view, the risks of medicine are greater currently because of the availability of more invasive procedures - and will become more so as even more radical biomedical technologies become available. However, I agree fully with her analysis of the reasons for loss of public trust in medicine, and her overall argument that the exercise of autonomy in healthcare decision-making is not the sole determinant in public trust in the healthcare system.

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<sup>286</sup> Onora O'Neill, *Autonomy and Trust in Bioethics* (Cambridge: Cambridge University Press, 2002), pp. 1-12.

The application of “high-tech” biomedical technologies, such as some of those proposed by transhumanism – for example, mind uploading, cybernetics or genetic enhancements – has the potential to make radical changes to human function and longevity. These changes may undermine individual moral agency – and therefore personal autonomy. For example, a cybernetic arm with complex computer control software, could include an anti-tamper mechanism which might cause the prosthesis to automatically shut down and stop functioning – against the will of the person to whom it is attached – if a surgeon interfered with it. Also, with a person whose mind has been uploaded on a computer, their personal identity may be preserved, but their ability to act in a certain way as a person in the world – which is the basis of moral agency – will be to some extent compromised by the loss of their body, even if there are some artificial interfaces that might compensate to enable the uploaded person to engage in some ways with material life.

The use of such technologies could therefore over-determine the attributes of human life for those in whom they are deployed. Miccolli argues that transhumanism leads to an abdication of human responsibility and, with an eschatological flavour, he asserts that, in the technology-enabled world, “technology is God, and all will ultimately submit to it.”<sup>287</sup> Consequently, in a future technologically-enhanced world, individual autonomy and responsibility may be subverted by the will of those who develop, distribute and apply radical technologies, and the individual themselves may collude with this loss of moral agency by their acceptance and use of these technologies.

In his work on reproductive technologies, O’Donovan states that, in the modern era, the uncritical assumption in society is that medical technologies achieve necessary purposes, must be used if available and that the practitioner must arrange access to the technology.<sup>288</sup> Yet, as discussed above, personal autonomy is, to all intents and purposes, a genuine attribute for most people at

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<sup>287</sup> Anthony Miccoli, *Post-human Suffering and the Technological Embrace* (Lanham: Lexington, 2010), pp. 123-133.

<sup>288</sup> Oliver O’ Donovan, *Begotten or Made?* (Oxford: Clarendon, 1984), pp. 9-10.

most times of life (although less so at the beginning and end of life). Consequently, the individual can choose whether they wish to use a biomedical technology, irrespective of societal expectations. Autonomy is therefore significant scientifically and theologically, as well as desirable from a standpoint of liberal modern society.

From this, I would argue that, as a general principle, medical technologies should not be adopted uncritically and without any reflection on their implications. Instead, they should be explicitly evaluated and deployed in accordance with a reasonable assessment of their potential benefits and risks. In particular, given the above reflections on autonomy in the use of technology, control of medical technologies by humanity, and their critical assimilation into human society, is a valid Christian response to their availability, and is consistent with current approaches to evidence-based medicine.<sup>289</sup> The polar alternative is the situation that Miccolli describes; where the technology – or, at least, the culture surrounding the technology - controls humanity instead. There are indications that this is already happening with the adoption of digital media and personal devices, which are now highly pervasive in human society, and have considerable potential to manipulate human behaviours.<sup>290</sup>

However, the nuances of autonomy should be considered. As discussed above, human autonomy is genuine at most times of life, in that it is based on the desires and will of the individual, which can be acted upon at the basic level. However, autonomy may present itself with varying degrees of efficacy and applicability, depending upon the external factors, the different situations and circumstances that a person might face. In many situations, a person can exercise genuine moral agency – self-determination based on their authentic

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<sup>289</sup> Steven Woolf, "Evidence-Based Medicine: A Historical and International Overview", *Proceedings of the Royal College of Physicians of Edinburgh*, 31 (2001), pp. 39-41.

<sup>290</sup> See, for example, Benedikt Ley, Corinna Ogonowski, Jan Hess, Tim Reichling, Lin Wan and Volker Wulf, "Impacts of new technologies on media usage and social behaviour in domestic environments", *Behaviour and Information Technology*, 33 (2014), pp. 815-828.

desires and will – but sometimes that moral agency may be undermined by external controlling factors.

This ambiguity of autonomy may be difficult for those assessing new technologies. However, autonomy has always been an ambiguous concept in medical ethics, because of the possibility of unintended consequences of medical treatment. A person might choose to receive a large dose of an opiate analgesic for relief of severe pain. However, the same dose of opiate might lead to respiratory depression and death – which the person may not have chosen. Thus, the same action might either uphold or diminish a person's autonomy, depending on the effects of the action on that person's body. In medicine, unintended consequences are an important factor in whether a person or practitioner can exercise true autonomy when making treatment choices, and the doctrine of double effect in medical ethics protects and upholds the good motivations of the practitioner against the uncertainty of unintended consequences.

In addition to the question of autonomy, defined as self-determination by the individual, and what might undermine it, there is the separate question of the morality of the choice made by the autonomous person. As highlighted previously, the capacity for autonomous choice may be consciously exercised by a person for good ends or for bad ends. The moral agent may choose to do good works in human society, creating a just and fair society and nurturing a positive and generous culture. Alternatively, the agent may choose to act selfishly, for vanity or personal gain, or to exploit the weak and marginalised in society for their own benefit. While the fact of having autonomy might have some innate moral value, the choice made by the autonomous individual will also contribute to the moral significance of the situation.

One response to this issue of appropriate use of autonomy might be to use biomedical technology for “moral enhancement”, to ensure people always make



good moral choices.<sup>291</sup> Although moral bio-enhancement is medically possible, it would be problematic for understanding autonomy. If the moral enhancement agent changes the individual's desires and will so that they always want to make the right choice – and therefore they do always make the right choice – then with a coherentist understanding of autonomy (the course of action chosen is aligned with the person's desires), the person's autonomy would not actually be compromised, even though the person is indeed being influenced by an external factor. As far as autonomy is concerned, the problem with biomedical interventions for "moral enhancement" is their potential to short-circuit the process of a person reacting to, and reflecting upon, a situation where a moral decision needs to be made.<sup>292</sup> This process of reaction and reflection, where a person discerns moral factors and implications in a situation as a prerequisite of making good decisions about that situation, is important if moral agency is to be truly self-determined, or autonomous. In other words, there is moral value in a person having autonomy to make a good or bad moral choice, reflecting on the choice and then making a good choice.

Savulescu and Persson propose that pharmaceutical products can be used for moral enhancement and increasing individual autonomy.<sup>293</sup> However, in response, Sparrow contends that the autonomy provided by pharmaceutical enhancements is illusory and that there is a risk that enhancements simply provide a "fig leaf" for abuse of power and vested interests in a technically-advanced society.<sup>294</sup> Apart from the question of precisely what interventions might be considered pharmacologically-mediated "moral enhancement", Sparrow argues that possible inequalities between enhanced and unenhanced persons could infringe the autonomy of the unenhanced.<sup>295</sup> Savulescu and

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<sup>291</sup> Thomas Douglas, "Moral Enhancement", *Journal of Applied Philosophy*, 25 (2008), pp. 228-245.

<sup>292</sup> For example, where a person is considering a change of career where there might be consequences and a wide range of social and ethical factors to consider.

<sup>293</sup> Julian Savulescu, Ingmar Persson, "Moral enhancement, freedom and the God machine", *The Monist*, 95 (2012), pp. 399–421.

<sup>294</sup> Sparrow, "Better Living through Chemistry?", pp. 23-32.

<sup>295</sup> Sparrow, "Better Living through Chemistry?", pp. 23-32.

Persson propose the somewhat abstract concept of a “god-machine” as an inhibitor of unbridled autonomy, a regulatory system or process which would intervene if an enhanced person chose to act immorally in that society. However, Sparrow replies that human beings would still not be free in this situation. He cites Phillip Pettit’s republican principle of non-domination as a criterion for freedom – i.e. that, for a person to be truly free, they must not be subject to domination by another person, group or a political system.<sup>296</sup> Sparrow argues that a person is therefore not free even if they are dominated by a “benevolent” dictator, such as Savulescu and Persson’s proposed “god machine”, because it is still a dictator.

Sparrow concludes that humans would be less free in a future, technological world than in the world as it is at present. He argues that, paradoxically, the principle of personal autonomy would be undermined, not supported, by extensive and radical use of biomedical technology at will. Sparrow compares “moral enhancement” – development of moral agency – by pharmacological means, with moral agency inculcated by moral and cultural education, and concluded that these two modalities for developing moral agency cannot be ethically equivalent. Moral advancement by education has implicit in it the freedom provided by education, with the potential for debate, dialectic and counterargument. By contrast, drug enhancement is a technical intervention. It is instrumentalist - i.e. it is a pragmatic intervention towards a specific end, rather than something of moral value in itself - and it treats the person enhanced as an object to be manipulated, rather than a personal subject who is able to make decisions freely as a moral agent. Sparrow argues persuasively, therefore, that personal autonomy is, in fact, reduced after moral enhancement by pharmacological means. If biomedical technology were regularly applied to human beings in this instrumentalist manner, this would be morally deficient as it would make personal autonomy and the exercise of the will routinely dependent on the effects of a biomedical technology, which could be deployed in society in an oppressive way.

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<sup>296</sup> Philip Pettit, *Republicanism: A Theory of Freedom and Government* (Oxford: Clarendon Press, 1997), pp. 21-25.

The effects of biomedical technologies on personal autonomy and the ability of these technologies to objectify a person as an artefact to be manipulated at the expense of their subjectivity as an authentic self are both important themes in this thesis and will be explored in detail in subsequent chapters. However, I will now explore in more detail natural law objections to radical biomedical technologies.

### 2.10.3. Transhumanism & Nature

Although the concept of natural law (as distinct from civil law) was seen in the work of some classical philosophers – for example, Aristotle, and implicitly in the work of Plato – natural law was developed in its fullest form during the scholastic era in the twelfth and thirteenth centuries, through the work of theologians such as Thomas Aquinas.<sup>297</sup> Aquinas developed a detailed and systematic theological account of natural law, drawing on Patristic sources, Aristotle, Stoicism and Roman legalists. The objective of natural law was to develop a comprehensive Christian legal and ethical framework to enable the church to respond to new situations and new forms of learning that were arising in the rapidly changing society of the high Middle Ages.

The basic tenet of natural law, derived from Aristotle, is that “the good of every organism is to attain fully its natural activity.”<sup>298</sup> In other words, all creatures are directed towards good ends by virtue of their nature. Consequently, any phenomenon that prevents a creature fulfilling its nature will frustrate the good ends of that creature’s nature. Aquinas expressed his natural law theory in Q90-94 of *Summa Theologica*.<sup>299</sup>

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<sup>297</sup> Stephen Pope, “Natural Law and Christian Ethics”, in *Cambridge Companion to Christian Ethics*, edited by Robin Gill (Cambridge: Cambridge University Press, 2012), pp. 67-86.

<sup>298</sup> Pope, “Natural Law and Christian Ethics”, p. 67

<sup>299</sup> Thomas Aquinas, “Summa Theologica Q90-94”, 2010, [https://www.documentacatholicaomnia.eu/03d/1225-1274,\\_Thomas\\_Aquinas,\\_Summa\\_Theologiae\\_%5B1%5D,\\_EN.pdf](https://www.documentacatholicaomnia.eu/03d/1225-1274,_Thomas_Aquinas,_Summa_Theologiae_%5B1%5D,_EN.pdf). (accessed September 2020).

The key principles were:

- There are four laws – eternal law, natural law, divine law and human law (Q90, Art 1).
- Natural law is reasonable and arises from the wisdom of God. Humans are therefore rational creatures (Q90, Art 3; Q91, Art 2).
- Natural law is directed towards flourishing, the common good and virtue of all creatures (Q90, Art 2, 3; Q94, Art 3).
- Natural law is the means by which subjects are directed to their good ends (or “proper virtue”) (Q92, Art 2).
- General principles of truth and morality apply to all people, and are equally known by all people (Q94, Art 3).

Thomistic natural law therefore has a teleological element – natural law is directed towards the goal of human flourishing, the exercise of virtue (which Aquinas defines as “that which makes something good”) and the common good of all people. Thomistic natural law emphasises the importance of reason in moral decision-making, as a reflection of the divine wisdom of God. Aquinas considered the good of human flourishing to be life, procreation, social life, knowledge and rational conduct.<sup>300</sup> Furthermore, and of importance for this thesis, natural law does not regard things that are artificial as intrinsically evil.

Thomistic natural law in the Roman Catholic church was revived in the nineteenth century, following the publication of *Aeterni Patris* by Pope Leo XIII in 1879. This re-emergence of natural law was also in response to rapidly changing conditions in European society, and this publication addressed workers’ rights and associated pastoral issues in the increasingly developed industrial society of the Victorian era.<sup>301</sup> This laid the foundations for the use of

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<sup>300</sup> Mark Murphy, “The Natural Law Tradition in Ethics”, in *Stanford Encyclopaedia of Philosophy* (2019), <https://plato.stanford.edu/entries/natural-law-ethics/> (accessed September 2020).

<sup>301</sup> Pope, “Natural Law and Christian Ethics”, pp. 77-78.

Thomistic natural law in Roman Catholic moral deliberation on hormonal contraception in the twentieth century, which I will explore in Chapter 3.

Since Aquinas, there have been various other natural law theorists. These included, in the early modern era, Hugo Grotius and Thomas Hobbes, both of whom downplayed any theological basis for natural law, and also the teleological aspect of natural law.<sup>302</sup> Grotius sought to develop a framework of natural rights, as opposed to natural law, attempting to develop natural law as a universal political system. Hobbes, on the other hand, interpreted natural law in radically individualist, subjectivist terms, where the central good of human life was self-preservation. The retreat from teleology in natural law in the modern era led to the naturalism of modernity, where moral conclusions were drawn from observations from nature. David Hume criticised this approach, arguing that it is not possible to derive moral precepts from non-moral phenomena (i.e. natural attributes), an argument known as the “is-ought” problem.<sup>303</sup>

In the twentieth century, the so-called “New Natural Law theorists”, such as Germain Grisez and John Finnis, expressed natural law in a way that was independent from theology and any notion of virtue, individualistic rather than emphasising the common good, and which described the goods of humanity in personalist terms.<sup>304</sup>

As I implied above, there is therefore a major distinction between Thomistic natural law, to which teleology is intrinsic, and the naturalism of modernity, from which biological teleology has been eliminated. In my discussion of natural law in relation to biomedical technologies - both previous biomedical technologies in Chapters 3 and 4 and future biomedical technologies in Chapter 5 – I shall be referring to the Thomistic model of natural law, rather than more modern approaches. This is for three reasons. First, natural law ethical engagement with medicine by the Roman Catholic church to date has been from a Thomist

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<sup>302</sup> Pope, “Natural Law and Christian Ethics”, p. 74-77.

<sup>303</sup> David Hume, *A Treatise of Human Nature*, edited by L.A. Selby-Bigge (Oxford: Clarendon Press, 1978), p. 469.

<sup>304</sup> Pope, “Natural Law and Christian Ethics”, pp. 78-79.

perspective, as will be discussed in the two case study chapters. Second, the Thomist approach is very clearly rooted in theology, and so is most appropriate for a Christian ethical evaluation. Third, the Thomist approach seems to be clearly committed to the common good, which is important given the social, public and political aspects of biotechnology development which I will discuss in Chapter 5.

The main advantage of natural law as a foundation for ethical reflection is that, because it is based on human reason, it claims to be universally applicable to all cultures and it affirms the innate moral capacity of every person. Morality grounded in human nature should, in theory, be the same in all societies and for all people.

There are, however, problems with natural law as a source of ethics. Natural law has been criticised theologically for three main reasons. First, at the Reformation, Martin Luther claimed that, because of its emphasis on human reason, natural law could not be salvific; humans were completely unable to determine morality by reasoning because human reason suffers from the effects of original sin. Second, natural law downplays the role of revelation in the Christian moral life; for this reason, natural law was criticised by the Reformers in the sixteenth century, and by Karl Barth in the twentieth century. Third, because natural law is focused on the reasoning of the individual, it does not account for the supernatural transformative power of the Holy Spirit, nor does it acknowledge the Christian community as an arbiter of morality.

As well as the philosophical and theological problems described above, natural law has also been criticised from a scientific basis, because its key concepts appear to be undermined by the findings of evolutionary biology.<sup>305</sup> The idea of a fixed and unchanging order of nature is challenged by the evolutionary principle that nature is changing and evolving. Furthermore, scientific evidence

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<sup>305</sup> Stephen Pope, "Theological Anthropology: Science and Human Flourishing", in *Questioning the Human: Toward a Theological Anthropology for the Twenty-first Century*, edited by Lieven Boeve, Yves De Maeseneer and Ellen Van Stichel (Oxford: Oxford University Press, 2014), pp. 16-17.

reveals aspects of nature that appear flawed and that, from an ethical perspective, humans should in some circumstances struggle against nature, rather than conform to it. Kevin Vanhoozer has similarly argued that the human sciences have led to the conclusion that there is no one human nature.<sup>306</sup>

This debate questions the ability of natural law to be an adequate foundation for ethics of medicine and biotechnology in the twenty-first century when many of these technologies are able to manipulate nature itself. This question, in relation to past therapeutic discoveries and proposed future biomedical technologies, will be discussed at length later in the thesis.

There may be a parallel between transhumanism and Christian belief in terms of teleology, in that both are concerned with changing humanity to escape corruption and improve the human experience. However, there seems to be a tension between transhumanism and natural law concerning the fixity of human and animal nature that natural law appears to suggest. Inherent in transhumanism - for example, in F.M. Esfandiary's description of the transhumanist as a "transitional human" constituting "an evolutionary link with the coming era of post-humanity",<sup>307</sup> and in the evolutionary understanding of transhumanism shown by Kurzweil, Moravec and Hayles - is the idea that human nature is eminently malleable and changeable. This, however, seems to be in contradiction to the notion of a fixed order of creation and of human nature that natural law suggests.

In any case, there are some goods of life that may not be aligned to the natural world. Hopkins quotes Thomas Aquinas as saying that happiness is the ultimate human goal, but argues that this cannot be fulfilled in a flawed material world.<sup>308</sup> Conversely, he states that, while advocates of technology might wish to argue that greater knowledge of, and control over, the natural world is desirable, this

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<sup>306</sup> Kevin Vanhoozer, "Human Being: Individual and Social", in *Cambridge Companion to Christian Doctrine*, edited by Colin Gunton (Cambridge: Cambridge University Press, 1997), p. 161.

<sup>307</sup> Fereidoun M. Esfandiary and FM-2030, *Are You a Transhuman? Monitoring and Stimulating Your Personal Rate of Growth in a Rapidly Changing World*. (New York: Warner, 1989), p. 149.

<sup>308</sup> Hopkins, "Is Enhancement Worthy of Being a Right," p. 351.

knowledge and control can be exercised in an arrogant and hubristic way, and thus be immoral. Bailey, a supporter of transhumanism, points out that the application of biomedical technology does not preclude virtuous moral behaviour on the part of the users.<sup>309</sup> He argues that people are not necessarily less moral or loving in a technological age, pointing out that parental love has not been affected by in vitro fertilisation (IVF) to aid conception. The argument that the use of supposedly unnatural biomedical technology does not undermine virtue is significant, because natural law theory has historically been the basis for the Roman Catholic church's moral pronouncements about biomedical technologies, such as the contraceptive pill. This will be discussed in greater depth in the next chapter and in Chapter 5.

In an analogous way, some theologians have pointed out that the effects of medical technologies on the nature of the human person do not necessarily constitute a violation of spiritual life. In her review of the theological implications of transhumanist technologies, Elaine Graham has argued that the effects of a medical technology on human nature do not preclude spiritual life.<sup>310</sup> Ronald Cole Turner has argued that medical technology is imposing a new metaphysics on human nature – what could be described as a “meta-technology”.<sup>311</sup> He examines Peter Kramer's controversial book “Listening to Prozac” (which will be discussed in more detail in Chapter 4 on SSRI antidepressants) and has argued that reductionist biological arguments have caused humanity to conflate natural and spiritual considerations, and that human society is now trying inappropriately to solve spiritual problems with pharmacological solutions. Both Graham and Cole-Turner envisage a distinctively spiritual component of human life, which the use of biomedical technology does not necessarily undermine.

Consequently, distinctions between what is natural and unnatural are relatively unhelpful in the technological world, although the natural/unnatural distinction may provide a useful starting point. Rather than thinking of nature and natural

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<sup>309</sup> Bailey, “For Enhancing People”, pp. 331-332.

<sup>310</sup> Elaine Graham, “In Whose Image?” p. 69.

<sup>311</sup> Ronald Cole-Turner, “Towards a Theology for the Age of Biotechnology”, in *Beyond Cloning: Religion and the Remaking of Humanity*, edited by Ronald Cole-Turner (Harrisburg PA: Trinity Press International, 2001), p. 143.



law as a *yardstick* against which new technologies can be measured, it might be better to think of nature as a *scalpel* with which new technologies can be dissected, to evaluate them and understand what is important about them. The limitations of natural law as a means of ethical evaluation of future biomedical technologies, in the light of past experience, will be developed and explored in detail in Chapter 5.

#### 2.10.4. Transhumanism & Embodiment

In the Judaeo-Christian tradition, the human body has an innate moral value, as indicated by Old Testament scriptural emphasis on the sanctity of life (for example, seen in Genesis 9v6, Exodus 20v13). In addition, there are various strands of Christian thought that come together to support the Christian significance of embodied life.

First, there is the goodness of created humanity (Genesis 1v31). Second, there is the incarnation, the belief that God himself assumed the human form as Jesus Christ (Philippians 2v5-7). Third, there is the compassion of Jesus towards the bodily needs of those around him during his earthly life, for example with his healing miracles (see, for example, the woman with a bleed (Mark 6v25-34), blind Bartimaeus (Mark 10v46-52, and the crippled man by the pool (John 5v1-15)). Fourth, and most obviously connected with a Christian evaluation of life-extending medical technologies in future because of its eschatological dimension, is the resurrection of Jesus and the New Testament concept of the resurrection body – both Christ's resurrection body, and the resurrection bodies that Christian believers will ultimately inherit.<sup>312</sup> The concept of the resurrection body emphasises the fact that bodily identity remains significant after death, from a perspective of Christian eschatology, and therefore implies that the body is significant in Christian terms during life.

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<sup>312</sup> Leon Morris, "Resurrection", in *New Bible Dictionary*, edited by Iain Marshall, Alan Millard, James Packer and Donald Wiseman (Leicester: IVP, 1996), pp. 1011-1012.

This contrasts with the dualism of Platonism, which was a key feature of the Greco-Roman thought-world during the New Testament era.<sup>313</sup> This dualism maintained that the mortal body has an immortal soul within it and, when the mortal body dies, the immortal soul is released from the “envelope” of the body. Indeed, this idea of the immortal soul living forever after bodily life has found its way into popular belief about the resurrection.<sup>314</sup> The conflict between the importance of embodied life and the significance of the resurrection body in early Christianity on one hand, and the prevailing body-soul dualism of Platonist thought in wider society at that time on the other, stimulated significant teaching about the issue in the Corinthian church (1 Corinthians 15).

Nevertheless, despite this sharp contrast between Christian and Platonic accounts of the body, Christian attitudes to the body have been ambivalent and by no means wholly positive about human bodily experience.<sup>315</sup> First, Platonist thought may have exerted a negative influence on the early Christians and their attitudes to the body (hence the need for Paul’s teaching on body-related issues – for example, on sex in 1 Corinthians 5-7). Second, Moltmann-Wendel suggests that “at a very early stage” (presumably during New Testament history), some Christians may have embraced the Stoic principle of the body as “a necessary evil”, as a compromise which enabled them to reject Platonism, but remain coherent and intelligible to the philosophical thought forms of the world around them.<sup>316</sup> Third, the value of human life in that era, together with the Christian hope of resurrection, may have meant that the early Christians held lightly to bodily life, and were less troubled by the prospect of death and martyrdom. As Paul said to the Philippian church, “To live is Christ, and to die is gain” (Philippians 1v21). However, Paul has also upheld the value of the body in his rebuttal of the consequences of dualism, because of the spiritual

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<sup>313</sup> For a summary, see Delbert Burkett, *An Introduction to the New Testament and the Origins of Christianity* (Cambridge: Cambridge University Press, 2019), p. 85.

<sup>314</sup> Oscar Cullmann, *Immortality of the Soul or Resurrection of the Dead* (London: Epworth, 1958), pp. 15-20.

<sup>315</sup> See discussion in Elizabeth Moltmann-Wendel, *I am my Body: New Ways of Embodiment*, translated by John Bowden (London: SCM, 1994), pp. 1-4.

<sup>316</sup> Moltmann-Wendel, *I am my Body*, p. 42.

significance of the body (for example, in 1 Corinthians 6,19, against sexual licence, “do you not know that your body is a temple of the Holy Spirit?”).

Some theologians – for example, Origen and Augustine – have, in fact, taken a dualistic approach to theological anthropology and have emphasised the importance of spiritual things in the Christian life over the significance of the physical body, and this dualistic approach has had a significant place in the history of Christian thought. Because of this, it is all the more remarkable that such a positive view of the body is seen in the Bible and in the early church, especially in a pre-modern age when diseases were not treatable and human life was not valued in the same way as it is in the early twenty-first century. As well as arising from the Christian doctrines of the incarnation and the bodily resurrection of Christ, this emphasis on the significance of the material body may be also related to the idea of *shalom* as human wholeness, wellness and flourishing in the material sense.<sup>317</sup>

In any case, because of this strand of Christian thought emphasising the somatic significance of human existence, Christian critiques of transhumanist medical technologies are right to be suspicious of those technologies – for example, mind uploading and cybernetics – which deprecate the body, and undermine the goods of bodily human life. What might be the problems of a non-embodied existence from a Christian perspective? After all, it could be argued that transformation is transformation, and that transformation of the human body with radical medical technology is no different, in ethical terms, to transformation of the human body from an earthly body to a resurrection body by the power of the risen Christ, as envisaged by New Testament resurrection doctrine (1 Corinthians 15v51: “we shall all be changed”).

Brent Waters has extensively critiqued the aims of transhumanism from the perspective of transhumanist attitudes to the body.<sup>318</sup> He notes that, although transhumanists are seeking the perfection of humanity, this perfection comes at

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<sup>317</sup> Apolos Landa, “Shalom and Eirene: The Full Framework for Health Care”, *Christian Journal for Global Health* 1 (2014), pp. 57-59.

<sup>318</sup> Brent Waters, *This Mortal Flesh: Incarnation and Bioethics* (Grand Rapids: Brazos Press, 2009), pp. 149-183.

a high price. “The price of perfection for humanity is its deconstruction,” he claims.<sup>319</sup> Drawing on two short stories by Nathaniel Hawthorne, he notes - wisely in my view - that, with some technological interventions, there is no going back, and that the consequences of human invulnerability are uncertain. Along with nihilism and Pelagianism, Waters points to Manichaeism as a key theological influence on transhumanists. The Manichaeists of St Augustine’s time wanted to be rescued from the imperfections of their bodies, and the prospect of transhumanist technologies does just this, Waters claims. I would argue, however, that Waters possibly overstates his case. Divestiture of the body is not a central motivation for all transhumanists; for example, Bostrom is primarily seeking a better society<sup>320</sup> and More a better body.<sup>321</sup> Nevertheless, embodied life is important from a perspective of Christian doctrine, as I have discussed in this section, and Waters is right to point to the embodied aspects of the life of Jesus as counter-arguments to transhumanist technologies which deprecate the body. In the incarnation of Christ, the necessity of human finitude and mortality of the body are affirmed, Waters claims.<sup>322</sup> Furthermore, the resurrection of Christ makes possible the resurrection body of the believer, and the renewal of creation. Drawing on the work of Oliver O’Donovan, Waters argues that moral life is constituted in the ordering of the new creation; he argues, correctly in my view, that an embodied nature is vital to obtain the proper goods of marriage, because people can only love each other meaningfully as embodied creatures.<sup>323</sup>

There are two specific areas where the concept of embodiment is important to sustain a Christian account of authentic human life, and where Christian theologians are justified in their criticism of biomedical technologies which negate the body. The first of these is in relation to bodily experiences. Some experiences central to human life – for example, sex and eating – are inextricably linked to having a body, and existing as a body, as admitted by

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<sup>319</sup> Waters, *This Mortal Flesh*, p. 150.

<sup>320</sup> Bostrom, “Transhumanist Values”, pp. 9-10.

<sup>321</sup> More, “The Philosophy of Transhumanism”, p. 15.

<sup>322</sup> Waters, *This Mortal Flesh*, pp. 159.

<sup>323</sup> Waters, *This Mortal Flesh*, pp. 160-161.

Kurzweil, despite his advocacy of radical transhumanist technology.<sup>324</sup> This is reflected in Christian marriage, which is traditionally predicated, to a greater or lesser extent, on the physical union of the husband and wife. This also reflected in the consumption of the eucharistic sacrament, which is an essential part of religious observance for many Christian traditions.

Being an uploaded mind, rather than living an embodied life, would eliminate, or at the very least seriously undermine, these physical aspects of human life, both of which are “sacramental” in the broadest Christian terms, and are important in a Christian way of life in any culture, in a way which might transcend denominational affiliation.<sup>325</sup> Any attempt to recreate these experiences artificially in an *in silico* world (and indeed Kurzweil discusses the use of, for example, artificial interfaces to simulate sexual experience<sup>326</sup>) would be, at best, contrived and, at worst, meaningless. With the development of sophisticated artificial intelligence in the future, it is possible that an uploaded person’s virtual world could be made to be indistinguishable from physical reality. However, the fact remains that, however realistic the experience was, it would not actually be physical reality, and the material importance of bodily life would be undermined.

The Christian believer, living life as an uploaded mind, bereft of his or her body, would be deprived of both bodily union with a spouse, and spiritual union with Christ in the Eucharist. These important material things in the Christian life would be robbed of their power in a non-embodied world. This would be detrimental for the body of the individual Christian believer, and also for the body of the church, given the centrality of the sacraments in the ministry of Christ and the role of the sacraments, and their implications for ecclesial communion, in the life of the church on earth.

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<sup>324</sup> Ray Kurzweil, *The Age of Spiritual Machines: When Computers Exceed Human Intelligence* (New York: Penguin, 1999), pp. 133-134.

<sup>325</sup> The Eucharist and Marriage are both broadly sacramental in nature. With Baptism, the Eucharist is one of the two dominical sacraments (the sacraments instituted by Christ), and marriage is a sacrament of the Roman Catholic church.

<sup>326</sup> Kurzweil, *The Age of Spiritual Machines*, pp. 133-134.

The second area is in relation to personal identity. The existence of the eschatological resurrection body (1 Corinthians 15v35ff) is linked with personal post-mortem identity. The risen Jesus retained his identity in his resurrection body, and he was recognisable by the disciples, even though his body was different (John 20v10-20). In his discussion of anthropology of identity and the resurrection of the body, Fernando Vidal states that “According to established doctrine, the bodily and psychological identity of resurrected individuals will be the same as that of the persons they were while alive.”<sup>327</sup> A key element in the link between the body (resurrection or otherwise) and identity, Vidal helpfully points out, is that resurrection bodies are numerically identical to physical bodies – that is to say, they tally up. Nevertheless, Vidal rightly warns that the current notion of “identity”, characterised by “radical reflexivity, a first-person standpoint and disengagement from the body, is essentially a modern concept, and would not have been recognised and understood as such by the early church.<sup>328</sup> There are therefore complexities in the doctrine of the resurrection body about how exactly pre-mortem identity in the earthly body relates to post-mortem identity of the resurrection body. Nevertheless, in both cases, bodily attributes are linked somehow with personal identity, although the identity of the resurrection body is linked with that of Christ (see 1 Corinthians 15v49).

This is in contrast to transhumanist views which suggest that bodily identity is not necessary at all, and that personal identity can be established purely as pattern identity – the thought-forms and world of the mind alone.<sup>329</sup> As discussed earlier in this chapter, Ray Kurzweil and Hans Moravec have both appealed to pattern identity as a way of safeguarding personal identity in the possible future scenario of mind uploading, where an individual’s mind could be uploaded onto a computer. Feminist commentator Amy De Baets has claimed that pattern identity is a form of dualism which enables the material body to be

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<sup>327</sup> Fernando Vidal, “Brains, Bodies, Selves, and Science: Anthropologies of Identity and the Resurrection of the Body”, *Critical Inquiry*, 28 (2002), p. 940.

<sup>328</sup> Vidal, “Brains, Bodies, Selves, and Science”, p. 937.

<sup>329</sup> Kurzweil, *The Age of Spiritual Machines*, pp. 51-55; Hans Moravec, *Mind Children*, p. 116.

“forgotten” or discarded, in what she describes as a “Cartesian trick”<sup>330</sup>

However, the dualism between body and mind that she describes is not a Cartesian dualism because it is not a substance dualism; with pattern identity, the mind and its thought forms that constitute identity are not regarded as a substance, but a contingent property that can be instantiated in a completely different substrate – in a computer rather than in a biological brain and body. This contrasts with the monistic view held by Christian theologians such as John Polkinghorne,<sup>331</sup> and non-reductive physicalist philosophers such as Nancey Murphy.<sup>332</sup>

In any case, even if the individual whose mind has been uploaded onto a computer could assert their personal identity in that state, as Moravec supposes, they would not be able to escape their history of previous embodiment. This is because they will have memories and reflections related to their previous bodily existence, which may be significant for personal identity formation. This seemingly inextricable link between consciousness and embodiment is one of the reasons why Katherine Hayles rightly asserts the importance of bodily life and rebuts Moravec’s arguments for mind uploading.<sup>333</sup> To quote Hayles, “Embodiment has a history”.<sup>334</sup> Also, the claim by transhumanist Nick Bostrom that intellectual capacity is more significant for a person than species membership is also problematic for the idea of human

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<sup>330</sup> Amy De Baets, “Rapture of the Geeks: Singularitarianism, Feminism, and the Yearning for Transcendence”, in *Religion and Transhumanism: The Unknown Future of Human Enhancement*, edited by Calvin Mercer and Tracy Trothen (Santa Barbara, Ca: Praeger, 2014), pp. 181-98. De Baets argues that “forgetting the body is a Cartesian trick” at the expense of women and minorities. However, in my view, the identity of all people is compromised by disembodiment and pattern identity.

<sup>331</sup> John Polkinghorne, *Science and Theology: An Introduction* (London: SPCK/Fortress, 1998), pp. 49-65.

<sup>332</sup> Nancey Murphy, “Human Nature, Historical, Scientific and Religious Issues”, in *Whatever happened to the Soul: Scientific and Theological Portraits of Human Nature*, edited by Warren Brown, Nancey Murphy and H. Newton Malony (Minneapolis: Fortress, 1998), pp. 1-2.

<sup>333</sup> Hayles, *How we became Posthuman*, p. 1.

<sup>334</sup> Hayles, *How we became Posthuman*, p. 284.

embodiment, because it undermines the distinctiveness of human bodily form, as distinct from non-human creatures.<sup>335</sup>

Embodiment is not only important for human experience and personal identity, in terms of self-understanding, it is also important to enable humans to understand themselves in relation to the created world. The specifically embodied nature of a human being is highly significant for human engagement with the material concerns of the world's environment – for example, maintaining good natural habitats free from pollution, and using the earth's resources in a sustainable manner – because of the specific role of embodied human beings as producers and consumers of the earth's resources.

These considerations emphasise the dualistic – and, in my view, deficient - nature of pattern identity in the non-embodied person. With pattern identity, the individual, disembodied essence of a person is emphasised over, and at the expense of, the rest of the material world. The individual, disembodied essence of a person could possibly be classed as a material entity, in that it is comprised of data units expressed in the state of silicon,<sup>336</sup> but few would regard such an essence as embodied, in that it bears any resemblance to any current realistic understanding of human life and experience. One is left wondering whether the morphological freedom which some transhumanists advocate is at all compatible with the many features and goods of human life, which are grounded in human bodily experience.

On the question of identity, Celia Deane-Drummond argues that the Christian vocation of “fusion” with God is about the discovery of one's true identity, whereas the transhumanist project is about changing and eliminating identity, through biomedical manipulation of functional and cognitive attributes.<sup>337</sup>

Miccoli's critique of the potential consequences of the transhumanist project also touches on the issue of identity.<sup>338</sup> He argues that transhumanists do not

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<sup>335</sup> Nicholas Bostrom, “Human genetic enhancements: A transhumanist perspective”, *Journal of Value Inquiry*, 37 (2004), pp. 493-506.

<sup>336</sup> Regarding pattern identity as a “material” entity would help to counter the argument that pattern identity is dualistic.

<sup>337</sup> Deane-Drummond, *Future Perfect?* p. 177.

<sup>338</sup> Miccoli, *Post-human Suffering*, p. 124.



acknowledge their real motivations for using technology to transform human society; transhumanists want to embrace technology to expand themselves – to enhance their identity - but in fact the technology embraces them and changes them instead, thus diminishing their identity. He argues that, with technology, humans believe that they can master the world whereas, by using radical technology, humans sacrifice the opportunity of experiencing the world, and instead objectify the means through which the world should be experienced – the human body itself. Using radical biomedical technology denigrates the body by rendering it an object to be manipulated rather than a personal subject.

Elimination of the human body from human personal identity would have other ethical implications too. With the application of the doctrine of double effect in medical ethics, an action is morally permissible even if it causes inadvertent harm, so long as it is done for the right motives. As mentioned previously, situations where the doctrine of double effect is invoked in medicine are predicated on the natural, inter-individual variations in bodily function, which would include variations in therapeutic effects of medicines between individual people, due to metabolic and pharmacogenetic factors. In a world of disembodied humanoid life, personal function and identity would rely decisively on artificial systems and technology, and this would present problems. The more nuanced functional variations in complex artificial cognitive systems may well introduce some indeterminacy of cause and effect. This would mean that, while the cognitive system is, in theory, more controllable than a human organism, there might be areas of “coding” whose operation is not clear to the external technician. Therefore, it may, in fact, be harder to resolve problems in the posthuman person, than in a physical human body, in the light of three millennia of medical experience. The potential controllability of the cognitive system also raises the possibility of the disembodied person being controlled by external influences, with malign intent. This would constitute a loss of personal autonomy due to external factors, as defined earlier. The uploaded mind might appear to be a solution to the “problems” of bodily life but treating the “pathologies” of the posthuman person - the uploaded mind - in the future may turn out to be every bit as complex as treating the dysfunctional physical human body at present.

I conclude here that, from a Christian ethical perspective, embodiment is an important, and probably necessary, prerequisite for human flourishing, because it is the ground for authentic human experience and identity. I would argue that material aspects of the Christian faith – in particular the eucharist and marriage – and their significance, to a greater or lesser extent, in Christian life and observance - would be undermined by technologies that negate human bodily life, for example, mind uploading. As well as undermining the qualities of human life from a perspective of Christian praxis, technologies that negate the body will also have profound effects on the ethics of medical treatment. I will explore this further in the light of the two therapeutic case studies in Chapter 5.

#### 2.10.5. Transhumanism & The *Imago Dei*

The Christian doctrine of the image of God – that humanity is made in the image and likeness of God (Genesis 1v26) - has important implications for understanding human nature, and the relationship of human beings to God, and to each other. Before a discussion of the implications of transhumanism for the doctrine of *imago Dei*, a background discussion of the *imago Dei* is necessary.

The doctrine of *imago Dei* is derived from various Biblical texts in the Old Testament (Genesis 1v26-27, 5v1-3 and 9v5-6) and in the New Testament (for example, Colossians 1v15, 2 Corinthians 4v4, Ephesians 4v24). The meaning of *imago Dei*, as derived from Biblical exegesis, has been hotly debated.<sup>339</sup>

However, in the history of Christian thought, four main approaches to *imago Dei* theology have been proposed – the substantive, functional, relational and eschatological approaches.<sup>340</sup>

The substantive approach attempted to determine which attributes of substance are responsible for the *imago Dei* in human beings and was largely the approach taken in the development of the doctrine by theologians such as

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<sup>339</sup> Westermann has given an overview of the exegetical issues with the Gen 1v26-28 text in an excursus in his commentary of Genesis (Claus Westermann, *Genesis 1-11: A Continental Commentary*, translated by J.J. Scullion (Minneapolis: Fortress, 1994), p. 144.

<sup>340</sup> Summarised by Noreen Herzfeld (Noreen Herzfeld, *In Our Image: Artificial Intelligence and the Human Spirit* (Minneapolis: Fortress, 2002), pp. 10-32)

Augustine and Aquinas. Traditionally, the substantive attribute most commonly thought to represent the *imago Dei* in humans was rationality or reason. However, the substantive approach has various flaws.<sup>341</sup> First, it has the potential to be dualistic, in that a divinely given substantive attribute, such as rationality, is contrasted with material bodily life, and this can lead to human embodiment being downplayed. Second, because it takes a “bottom up” approach, which seeks the divine attribute in humans, it is often individualistic and does not accord well with a social world and the corporate dimension of faith and salvation envisaged in the biblical revelation. Third, an emphasis on specific substantive attributes as the *imago Dei* can lead to reductionism, as attributes that are supposedly distinctive of humans are then explained in biological terms and identified in other species in animal behavioural experiments.<sup>342</sup> A key criticism of the substantive *imago Dei*, however, is that it has a static view of human nature, rather than a dynamic view, and this is particularly important when considering the expected effects of a biomedical intervention on a person from a Christian perspective. I will explore this further in Chapter 5.

The functional approach takes the view that the *imago Dei* is not about the attributes of substance that human beings have, but the role, task or vocation they have in the world. The functional approach focuses on a “royal representative” exegesis of Genesis 1v26 concerning humankind ruling over the created world, and sees humanity as representative of God, in their task or office in the world.<sup>343</sup> However, the functional view has been criticised because

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<sup>341</sup> Noreen Herzfeld, *In Our Image*, pp. 25-27.

<sup>342</sup> Celia Deane-Drummond, “In God’s Image and Likeness: From Reason to Revelation in Humans and other Animals”, in *Questioning the Human: Toward a Theological Anthropology for the Twenty-first Century*, edited by Lieven Boeve, Yves De Maeseneer and Ellen Van Stichel, (Oxford: Oxford University Press, 2014), pp. 74-75.

<sup>343</sup> Richard J Middleton, *The Liberating Image: The Imago Dei in Genesis 1* (Grand Rapids: Brazos Press, 2005), pp. 88-89. Middleton draws on Von Rad’s exegesis of *imago Dei* in Genesis 1; the *imago Dei* in humanity expresses the authority and purpose of God in the world, in the same way as the statue of the king in a town would represent the rule and authority of the king in that place in the societies of the Ancient Near East.

it is often associated with the domination of humans over the non-human creative world, and the consequent anthropocentrism with which the world might be viewed. It is also problematic when considering the humanity of people who are seriously disabled or ill, and who may not have the authority of purposive function in the world. Herein lies another issue with the functional approach; it implicitly assumes some substantive attributes on the part of a person, in order that they might be able to function in the world. For example, one could argue that functioning in the world requires a human person to have attributes such as rational thought or moral capacity.

The functional approach to the *imago Dei* has been expressed in the idea of stewardship, that humanity images God by exercising a vocation to look after world that God created, on his behalf. Southgate has discussed the concept of stewardship as a model for the relationship between humans and the non-human creative world and has summarised its problems.<sup>344</sup> One criticism of the idea of stewardship is that it can be exploitative and treat the earth as a commodity. Another is that stewardship is anthropocentric, focusing on the role and ability of humans to act as stewards, and does not sufficiently account for the “wildness” of the world. However, for Southgate, a key critique of stewardship – and one I endorse - is that it is ethically cautious and not sufficiently future-oriented, in that the goal of stewardship is to leave the world in no worse a state than it was before. A stewardship approach to the exercise of human vocation in the world is therefore probably less applicable in the assessment of the adoption of future technologies in the world because it is insufficiently future-oriented.

A better approach to the exercise of human ethical responsibility in the care of the natural world in a technological world is the idea of humanity as created co-creator. Philip Hefner’s concept of the “created co-creator”, states that the purpose of human beings is to be “the agency, acting in freedom, to birth the

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<sup>344</sup> Christopher Southgate, “Stewardship and its Competitors: A Spectrum of Relationships Between Humans and the Non-Human Creation”, in *Environmental Stewardship: Critical Perspectives – Past and Present*, edited by R.J. Berry (London: T and T Clark, 2006), pp. 185-195.

future that is most wholesome for the nature that has birthed us” and that “exercising this agency is said to be God’s will for humans”<sup>345</sup>. On this basis, scientists have a moral and theological mandate to exercise their vocation to understand the created order by alleviating human suffering and enhancing human life, so long as it is consistent with ethical principles, such as justice and respect.<sup>346</sup>

Ted Peters argues that, as a created co-creator, humanity has a moral obligation to use science to transform the world so that it conforms more closely to the vision of God’s new creation.<sup>347</sup> For Peters, created co-creator-ship is an inherently ethical task, as it is directed towards the human destiny of the renewal of creation, and this, in my view, is its strength. Nevertheless, Peters acknowledges a key criticism of the created co-creator concept, that humanity must be cautious in their co-creativity in order to avoid utopian idealism.

Michael Northcott has made a sustained Christian critique of the idea of the created co-creator.<sup>348</sup> Drawing on two examples, a work of concept art by Damien Hirst and the cloned sheep, Dolly, Northcott argues that, in different ways, both modern art and cloning are a denial of the beauty of life, and that not all things made by human hand have aesthetic appeal. He states correctly that all human technology is influenced in some way or other by economic or social factors, and therefore careful attention should be paid to the purpose of the technology, an area that will be central to my discussion in Chapter 5. He argues that the morality of human making depends on an ability to frame that making in the God-given purposes of the original creator and, following Ricoeur, argues that modern art is an “idolatrous expression of the volitional self”. In my view, this criticism does not obviate the need for humanity to exercise the role of

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<sup>345</sup> Philip Hefner, *The Human Factor: Evolution, Culture, and Religion*, (Minneapolis: Fortress, 1993), p. 27.

<sup>346</sup> Day A, “The Nature of Humanity”, *Notes on Science and Christian Belief*, ISCAST (Vic.), 2001.

<sup>347</sup> Ted Peters, “Techno-secularism, Religion, and the Created Co-creator” *Zygon*, 40 (2005), pp. 845-862.

<sup>348</sup> Michael Northcott, “Concept Art, Clones and Co-Creators: The Theology of Making”, *Modern Theology*, 21 (2005), pp. 219-236.

created co-creator in the use of technology, because the ethical imperative to harness inevitable technology adoption for good ends, consistent with the new creation, is still there. However, this ethical imperative does place a considerable burden of responsibility on humanity in its created co-creator role; in particular, on scientists and therapists as they develop and evaluate new biomedical technologies.

The relational approach proposes that the *imago Dei* is not about what a person is, or what they do, but is about the person's relationship with God and with others. It has its roots in the Reformation, but was developed in its fullest form in the twentieth century by Karl Barth.<sup>349</sup> The relational approach to *imago Dei* has much to commend it, and has important implications for interpersonal relationships, the development of personhood and social and political theology. However, the relational approach has been criticised for not being sufficiently grounded on biblical exegesis, and also for focusing on certain human relationships at the expense of others.<sup>350</sup>

Following from New Testament passages describing Christ as the visible image of God (Colossians 1v15), the eschatological approach asserts that the *imago Dei* in human beings is perfected in relation to Christ, as the believer is conformed to Christ. However, the eschatological approach proposes that the *imago Dei* is still developing and will be ultimately perfected in humanity in perfect relationship with God at the eschaton. The German theologian, Wolfhart Pannenberg, was a key proponent of the eschatological approach and described human nature, and its natural dynamic movements to its destiny of life with God using the term *exocentricity* (*Weltoffenheit*) - an openness to the world, to each other and to our self-consciousness.<sup>351</sup> Pannenberg argues that

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<sup>349</sup> Karl Barth, *Church Dogmatics* (Edinburgh: T and T Clark, 1957) Vol III, Part 2, pp. 76-77, pp. 323-324.

<sup>350</sup> See, for example, Bernd Oberdorfer, "The Dignity of Human Personhood and the Concept of the Image of God," in *The Depth of the Human Person: A Multidisciplinary Approach*, edited by Michael Welker (Grand Rapids: Eerdmans, 2014) pp. 265-272.

<sup>351</sup> Wolfhart Pannenberg, *What is Man? Contemporary Anthropology in Theological Perspective*, translated by D.A. Priebe (Philadelphia: Fortress, 1970), pp. 1-13.

human beings are characterised by having a unique openness to, and freedom to enquire into, the world. The eschatological approach therefore takes seriously the dynamic nature of the *imago Dei*, as emphasised by the New Testament texts, and the concept of “human becoming” that has been proposed by theologians such as Arthur Peacocke.<sup>352</sup> Pannenberg’s eschatological approach to the *imago Dei*, with its emphasis on openness to the world and freedom to enquire into the world is also consistent with the idea of autonomy, defined as self-determination, in response to the world, as discussed earlier. A key problem with the eschatological approach to the *imago Dei* is that the *imago Dei* motif in Genesis 1v27 is introduced in the context of the creation account, and its significance seems more likely to be protological than eschatological. In addition, the eschatological approach has also been criticised for being individualistic, with insufficient emphasis on social structures and ethical action in the world, and potentially deterministic.<sup>353</sup>

Although these four approaches to *imago Dei* have been proposed, it is unlikely that any one of these alone can provide a definitive description of humanity, in the light of current scientific knowledge about human beings. Human life is, at the same time, dynamic, embodied, relational, functional, and teleological, so actually there would be elements of all four of these approaches in any contemporary theological description of human life.

Some proponents of transhumanism cite the *imago Dei* – that humanity is created in the image of God - in support of the transhumanist project. For example, Campbell and Walker ask how the frailty of the human body can be reconciled with the idea of humanity being in the image of God, and therefore argue that biomedical enhancements would, in effect, restore the image of God in humanity.<sup>354</sup> In a similar vein, Garner argues that, if medical enhancement technologies are not harnessed by humanity, humanity will be rejecting the

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<sup>352</sup> Arthur Peacocke, *Theology for a Scientific Age* (London: SCM, 1990), p. 312.

<sup>353</sup> Jacqui Stewart, *Reconstructing Science and Theology in Postmodernity* (Aldershot: Ashgate, 2000), pp. 151-152.

<sup>354</sup> Campbell and Walker, “Religion and Transhumanism”, pp. i – xv.

positive social transformation that is inherent in the human vocation to be in the image of God.

Some theologians have taken a similar approach. Ruth Page has made what appears to be a positive argument about the use of medical technology from the *imago Dei*, citing the problem of *imago Dei* and disease or disability.<sup>355</sup> She argues that, if a person is diseased or disabled, they are “imperfect” and so cannot image a perfect God. She states that it is often assumed that biotechnological interventions have the potential to distort the image of God but, in this scenario, it could be argued that medical enhancements would restore the perfect image of God in someone who is diseased or disabled. On this basis, Page concludes, “playing God” would surely be a vice-regal duty, from a functional *imago Dei* perspective.

These arguments are all problematic. First, they suggest that the *imago Dei* is distorted – and so somehow incomplete - in disabled, or even just unenhanced, people.<sup>356</sup> Second, they imply that technology (which may not be realistically available) may be needed to somehow enact the *imago Dei* in the disabled or unenhanced person, to validate that person. Third, it suggests the *imago Dei* can be completed in human beings by human will, with the application of medical technology, whereas the Christological dimension of the *imago Dei* would suggest that human beings can only be perfected by God’s initiative through being in Christ, who is the perfect image of God (Colossians 1v15).

However, there are several other criticisms of transhumanism that arise from *imago Dei* theology. First, transhumanists tend to focus on the individual as the subject for enhancement, and on individual autonomy in choosing enhancements. This, however, is in tension with functional and relational approaches to the *imago Dei* which are not individualist in nature. The functional approach to the *imago Dei*, based on the “royal representative”

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<sup>355</sup> Ruth Page, “The Human Genome and the Image of God”, in *Brave New World? Theology, Ethics and the Human Genome*, edited by Celia Deane-Drummond, (London: T and T Clark, 2003), pp. 68-85.

<sup>356</sup> John Kilner, *Dignity and Destiny: Humanity in the Image of God*, (Grand Rapids: Eerdmans, 2015), p. 19.



exegesis of Genesis 1v26,<sup>357</sup> states that humans exercise representative authority on behalf of God on earth, and that they have a vocation or office which necessarily brings them into relationship with the world around them. Ng argues that, just as in the Old Testament, the king had a covenantal relationship with God and a duty of ethical and social responsibility to the kingdom, analogously, with the functional view of the *imago Dei*, humans have an ethical and social responsibility for the whole of creation by virtue of being part of creation.<sup>358</sup> Along similar lines, Brent Waters argues that, whether or not they remain human by biological criteria, those who undergo radical transhumanist enhancements cease to be bearers of the *imago Dei* precisely because they reject their election or calling by God to be co-regents in the world.<sup>359</sup> Waters' argument here is that the adoption of radical transhumanist enhancements impairs the eschatological *imago Dei* because it prevents the person from progressing to their eschatological destiny from a Christian perspective – finitude and union with Christ. Set against this, however, is the possibility that a transhumanist enhancement might enable a person to live a better, more moral, life in this world. This is a key aspect of the debate about the Christian acceptability of radical transhumanist enhancements, which I shall be exploring further in Chapter 5.

The relational approach to the *imago Dei* focuses on relational aspects of human life – vertically with God, and horizontally with other humans – rather than specific human attributes. So, for example, in his account of the *imago Dei* in relational terms, Alistair McFadyen has examined the vertical relationship, the dialogical relationship that humans have with God, and the horizontal relationships with fellow humans.<sup>360</sup> He claims that, if these horizontal

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<sup>357</sup> Middleton, *The Liberating Image*, pp. 88-89.

<sup>358</sup> Ng Kam Weng, "The Image of God, Human Dignity, and Vocation", in *Humanity – Texts and Contexts: Christian and Muslim Perspectives*, edited by Michael Ipgrave and David Marshall (Washington DC: Georgetown University Press, 2001), pp. 11-12.

<sup>359</sup> Brent Waters, *From Human to Posthuman: Christian Theology and Technology in a Postmodern World* (Farnham: Ashgate, 2006), p. 123.

<sup>360</sup> Alistair McFadyen, *The Call to Personhood: A Christian Theory of the Individual in Social Relationships* (Cambridge: Cambridge University Press, 1990), pp. 17-44.

relationships with other human beings fully reflect God's image, they too will be dialogical and outward-looking. Christ perfectly communicates God to humanity (in a dialogical, other-centred way), so faith is therefore transformative for relationships, and the church should model this to the world. Although there is the potential for the Christological dimension of the *imago Dei* to be individualistic, because it is about the individual's relationship with God in Christ, conformation to Christ ("the image of the invisible God" (Colossians 1v15)) as the eschatological goal (*telos*) for humanity is ultimately not an individual and private matter, but a corporate matter, in line with the New Testament idea of the body of Christ (1 Corinthians 12v12-27) and of the city of God (Revelation 21).<sup>361</sup>

Both Scott Midson and Matthew Zaro Fisher have attempted to develop a transhumanist theological anthropology, based on an appeal to the relational aspect of the *imago Dei*. In his recent publication, *Cyborg Theology*, Scott Midson has explored whether theological anthropology can accommodate the challenges to human/machinic boundaries presented by the cyborg.<sup>362</sup> Midson acknowledges the problems of the human-machine boundary that the cyborg presents, as identified previously by Haraway, and furthermore claims that the cyborg has been "othered" – treated with suspicion as alien – in literary and film portrayals. This cyborg technophobia, he argues, is precisely because of previous approaches to human distinctiveness, in which human nature has been strictly defined. Midson then examines the different approaches to the *imago Dei*, to determine whether the cyborg can, in any sense, share the *imago Dei* with humanity.<sup>363</sup> He quickly dismisses the substantive approach – rightly so, in my view – as a point of contact with the cyborg because it emphasises exclusive human characteristics and has been associated with human domination, as described above. He is also critical of a functional approach to the *imago Dei* as a means of developing a cyborg anthropology. He argues, reasonably, that the exercise of human function in the world can also assert

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<sup>361</sup> Ng, "The Image of God, Human Dignity, and Vocation", pp. 13-14.

<sup>362</sup> Scott Midson, *Cyborg Theology: Humans, Technology and God* (London/New York: I.B. Tauris, 2018), pp. 5-9.

<sup>363</sup> Midson, *Cyborg Theology*, pp. 19-44.

human dominance and that, because it assumes human attributes, function is merely an extension of the substantive approach. However, in my view, Midson does not adequately describe the vocational element of the functional approach, the idea that function is concerned with the God-given human vocation to care for the world. This is an important area in the ethical consideration of biotechnologies, which I shall explore in Chapter 5. Midson favours a relational approach to the *imago Dei* as the basis of a cyborg theology. He argues that the relational approach is concerned with relational capacity, rather than human distinctiveness, and this downplays the boundary between the human and the cyborg. Furthermore, noting Anna Case Winters' observation that humans are co-constituted by their relationships, Midson argues that the dynamic understanding of identity that the relational *imago Dei* posits is helpful in accommodating the ontological ambiguity of the cyborg. He therefore concludes that the actor in a relationship need not be human, but could be a cyborg or an artificial intelligence, and in that sense a non-humanoid intelligence could bear the *imago Dei*.<sup>364</sup> However, in my view, this relational argument does not take into account the importance of embodiment. As discussed in the previous section, there are some aspects of life that do not make sense without a body and, from a Christian perspective, the body plays an important part in human identity.

Inspired by Thweatt Bates' work on the cyborg, Matthew Zaro Fisher contends that the uploaded mind, as a relational entity, bears the *imago Dei*, according to the relational approach to *imago Dei*.<sup>365</sup> He argues that the uploaded mind is not truly disembodied because it still needs a material element to exist, even if that is a computer, rather than a biological body. He then claims that a relational theological anthropology could still accommodate the uploaded mind as a

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<sup>364</sup> Midson, *Cyborg Theology*, pp. 44-47.

<sup>365</sup> Matthew Zaro Fisher, "More Human than the Human? Towards a "Transhumanist" Christian Theological Anthropology" in *Religion and Transhumanism: The Unknown Future of Human Enhancement*, edited by Calvin Mercer and Tracy Trothen (Santa Barbara: Praeger, 2015), pp. 23- 38.

relational entity. He appeals to Karl Rahner's idea of *Vorgriff*.<sup>366</sup> This is the approach to self-transcendence in which matter and spirit in the human person are not separate entities but are mutually constitutive, and the spirit is not a separate substance, but consists in matter's self-realisation. Zaro Fisher argues that, because of *Vorgriff*, a person can encounter God, others and themselves in a relational way, and the encounter is agnostic of the material nature of the person, which could equally be a biological body or a computer. From this, he concludes that the uploaded mind, or an artificial intelligence, could have the self-presence of personhood and, in that sense, bear the relational *imago Dei*.

I am unconvinced by this argument. Rahner's concept of *Vorgriff* is certainly helpful for understanding human personhood. However, if self-transcendence is material self-realisation, according to the Rahnerian account, then the material self-realisation of the embodied human and that of the uploaded mind will be different precisely because the materials involved are different in each case.

Although adherents of transhumanism may publicly proclaim the benefits of biotechnology for society and human flourishing, a close examination of the literature of the transhumanist movement shows that transhumanism is largely concerned with enhancement of the individual, as opposed to medical treatment, for personal benefit other than the healing of diseases, and is guided by individual human will. Unsurprisingly, this tends to be an individualistic and private endeavour. It is no coincidence that the rejection of traditional family values was one of the criteria for transhumanism proposed by philosopher F.M. 2030.<sup>367</sup>

Second, the transhumanism project is concerned with the attributes of the individual human being, often at the expense of other aspects of human life, such as relationships and culture. While this transhumanist aim is purportedly for good ethical ends – the survival and flourishing of humanity – an approach to humanity and the goods of human life that is focused on human attributes

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<sup>366</sup> Karl Rahner, "Natural Science and Reasonable Faith", *Theological Investigations*, 21 (2004), pp. 2-3.

<sup>367</sup> Bostrom, "A History of Transhumanist Thought", p. 11.

only represents a deficient view of humanity as created in the image of God. As discussed earlier, a substantive approach to the *imago Dei*, which focuses on the attributes of substance of the human being – for example, reason – is only one approach, which alone does not do justice to a comprehensive understanding of humanity as created in God’s image, based on the Biblical *imago Dei* texts. A person is more than the sum of their attributes, and cannot simply be reduced to those attributes, so an attribute-based measurement of a human being, such as transhumanists might propose, is a deficient view of the human being, from a perspective of the *imago Dei*. Indeed, such a reductionist view is similar to that proposed by reductionist, atheist scientists such as Francis Crick.<sup>368</sup>

Third, transhumanism challenges an eschatological approach to the *imago Dei* because it provides humanity with an alternative eschatology. In her commentary on transhumanism, Elaine Graham argues that the *imago Dei* points to a framework of values by which the proper ends of humanity might be adjudicated, whereas transhumanism provides a realised eschatology of immortality and escape from biological contingency.<sup>369</sup>

The implications of transhumanism for eschatology have been the subject of intense theological criticism of transhumanism and therefore will be discussed at length here. Celia Deane-Drummond argues that any secular eschatology that seeks immortality, but undermines any basis for that immortality, will not satisfy the human need for transcendence.<sup>370</sup> Prolonging human life, she argues, is one thing, but seeking eternity is quite another. Furthermore, she states, Christian eschatology deals with sin, but the secular eschatology of transhumanism does not.

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<sup>368</sup> Ian G. Barbour, *Religion and Science: Historical and Contemporary Issues*, (London: SCM, 1998), p. 79.

<sup>369</sup> Elaine Graham, “In Whose Image? Representations of Technology and the Ends of Humanity”, in *Future Perfect? God, Medicine and Human Identity*, edited by Celia Deane-Drummond and Peter Manley Scott (London: T and T Clark International, 2006), pp. 60-61.

<sup>370</sup> Deane-Drummond, *Future Perfect?* p. 174.

The key problem here is the transcendence-finitude paradox, which has been expressed very well by Noreen Herzfeld, in her evaluation of Reinhold Niebuhr's substantive approach to the *imago Dei*.<sup>371</sup> Both Augustine and Aquinas saw rationality as being a key attribute of humanity, and Aquinas described the "rational soul" as the prime component of human nature. Niebuhr followed Augustine in stating that the *imago Dei* was grounded in rationality but took the view that it was a rationality that went beyond the self, which he termed "self-transcendence"<sup>372</sup> Although a natural capacity for self-transcendence makes it possible for humans to perceive a transcendent God, it also makes humans naturally more reluctant to accept finitude. Adoption of transhumanist biomedical enhancements seems therefore to be an attempt to seek the best of both worlds – to overcome finitude and to seek a self-transcendence of one's own making, rather than expressing self-transcendence in a relationship with a transcendent God.

Brent Waters has examined the implications of biomedical technology for Christian eschatology. He argues that the postmodern view of the world assumes a sharp dichotomy between an open and a deterministic view of the universe.<sup>373</sup> He asserts that theology influenced by postmodernity tends to adopt an open view of the universe. This downplays the notion of pre-destination, he contends, but it also undermines human purpose and destiny. Waters goes on to argue that, if there is no eschatological *telos* for humanity, then there is no concept of divine providence, and therefore no purpose to the ordering of creation.<sup>374</sup> This argument is compelling given the evident interrelation of the doctrines of creation and providence. This leads to what

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<sup>371</sup> Noreen Herzfeld, *In Our Image: Artificial Intelligence and The Human Spirit* (Minneapolis: Fortress, 2002), p. 17, citing Reinhold Niebuhr, *The Nature and Destiny of Man: A Christian Interpretation. Vol. 1. Human Nature. Library of Theological Ethics* (Louisville, Ky: Westminster John Knox, 1996), pp. 269-271.

<sup>372</sup> Herzfeld, *In Our Image*, p. 22.

<sup>373</sup> Waters, *From Human to Posthuman*, pp. 123-125.

<sup>374</sup> Waters, *From Human to Posthuman*, p. 123.

Waters describes as a “eviscerated eschatology”.<sup>375</sup> As he pithily describes it, “the postmodern world is going nowhere, because it’s got nowhere to go”<sup>376</sup>

Waters claims that theology is faced with a stark choice if it wishes to embrace the postmodern values that underpin the use of radical technologies: it must either discard eschatology or redefine it in realised terms. In other words, if there is no robust eschatology, then every moral choice is a moment of judgment, where a person may be condemned because of their actions. Waters concludes that, in ethical terms, a postmodern approach to technology, as advocated by transhumanism, leads to slavery rather than freedom. This is consistent with the philosophical reflections by Sparrow on the loss of autonomy in a technology-enabled world.<sup>377</sup>

Moreover, Waters argues, eschatology cannot be rejected on a scientific basis because of the phenomena of emergence and convergence.<sup>378</sup> The idea of emergence is that biological life has developed from the physicochemical components of the universe, but it is irreducible to its lower-level components. Convergence concerns the independent evolution of two species towards the same biological characteristics. Waters contends that, because the ideas of emergence and convergence both suggest direction and purpose in the universe, they are teleological in nature, and are therefore consistent with the Christian idea of an eschaton.

While I agree broadly with Waters’ eschatological analysis, he does not seem to distinguish adequately between modernity and postmodernity as influences on technology adoption. As discussed earlier in this chapter, transhumanism has its roots in liberal modernity, and a key aspect of the culture of modernity has been the notion of “progress” in society and human living conditions, with the ethical implications this brings. With postmodernism, however, and its emphasis on individual experience, rather than corporate authority or epistemology, this element of progress is absent, and the adoption of technology becomes an

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<sup>375</sup> Waters, *From Human to Posthuman*, p. 124.

<sup>376</sup> Waters, “From Human to Posthuman”, p. 123.

<sup>377</sup> Sparrow, “Better Living through Chemistry?”, pp. 23-32.

<sup>378</sup> Waters, “From Human to Posthuman”, pp. 123-125.

individualistic, experiential endeavour. This would lead to a subtly different interpretation of the transhumanist movement as a world-improving philosophy.

Both Deane-Drummond and Waters identify a realised eschatology in transhumanism, which contrasts with the Christian eschatological hope. With transhumanist technologies, hope of perfection is realised – or not – when the technology is applied to the human person. From that point onward, hope is diminished because the eschatological destiny has already been realised, and there is nothing more to hope for.

The individualised and privatised eschatology of transhumanism, which is inward looking and realised, is in tension with the outward-looking exocentricity of human destiny, portrayed in Pannenberg's eschatological approach to *imago Dei*.<sup>379</sup> Vanhoozer suggests that Pannenberg's exocentricity goes beyond Niebuhr's self-transcendence, in that it is not just about the transcendent self at any one time, but about humans finding their destiny by being open to moving beyond their cultural framework.<sup>380</sup>

Against this, the realised eschatology of transhumanism seems to be a human self-restriction of eschatological freedom. Christian soteriology provides a means of transformation and perfectibility, but when human beings restrict themselves to technology as the primary means of transformation, as transhumanists generally do, they foreclose other means of achieving their destiny. It is ironic that transhumanists use the word *extropy*, to denote that humanity is an "open system" – when, in fact, manipulation of the human body to gain biomedical immortality places a limit on humanity, compared with the hope of immortality offered by Christian eschatology.

Pannenberg's exocentric eschatology is a better hope for human destiny than the false hope of transhumanism, for two reasons. First, there is a proleptic element to Pannenberg's eschatology. The perfect fellowship of redeemed humanity with God at the eschaton is, according to Pannenberg, disclosed in

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<sup>379</sup> Pannenberg, *What is Man?* pp. 1-13.

<sup>380</sup> Vanhoozer, "Human Being: Individual and Social", p. 173.



the fellowship of the church now,<sup>381</sup> and this links the eschatological future with human experience now. In a similar way, Shults therefore contends that an eschatological approach to the *imago Dei* provides people with a hope-filled way of being an embodied human, and one that frees them from the need for self-preservation.<sup>382</sup> This is ultimately more reassuring than the potentially unintended consequences of either medical therapy now or of radical transhumanist technologies in the future.

Second, for Pannenberg, the *imago Dei* is double-sided – it is about human destiny in the eschatological future but, at the same time, it is about human nature now – so, in theory, Pannenberg’s eschatology can incorporate an ethical dimension.<sup>383</sup> However, it has been suggested that Pannenberg’s approach might appear deterministic because of his insistence that human destiny is determined from the future by God, in a way that downplays the importance of responsibility and moral agency in human society.<sup>384</sup>

A fourth area of concern with transhumanism and the *imago Dei* is the Christian prohibition of idolatry. Wenzel Van Huyssteen explored this issue in some detail in his account of the *imago Dei* from the perspective of human distinctiveness.<sup>385</sup> Genesis 1v26 states that human beings are made in the image of God, suggesting a material image,<sup>386</sup> but elsewhere in the Old Testament (for example, Exodus 20), idols are prohibited. Van Huyssteen argues that the *imago Dei* is the one exception to the prohibition, saying that it was God’s prerogative to create humans in his image, but this privilege does

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<sup>381</sup> Looking at the church as a flawed human institution in contemporary society, it is hard to agree with this view.

<sup>382</sup> F. LeRon Shults, *Reforming Theological Anthropology: After the Philosophical Turn to Relationality* (Cambridge: Eerdmans, 2003), pp. 235 -242

<sup>383</sup> J. Wentzel Van Huyssteen, *Alone in the World? Human Uniqueness in Science and Theology* (Grand Rapids: Eerdmans, 2006), pp. 139-143.

<sup>384</sup> Jacqui Stewart, *Reconstructing Science and Theology in Postmodernity*, pp.151-152.

<sup>385</sup> Van Huyssteen, *Alone in the World?* pp. 116-132.

<sup>386</sup> Gordon Wenham, *World Biblical Commentary: Genesis - Volume 1* (Waco: Word Books,1987). pp. 26-33. Wenham notes that possible roots of the word *tselem* (image) include “to cut or hew” (from Arabic), which fits well with the idea of the image of God as a material representation.

not extend to human creativity, and humans cannot create God in their image. This raises the question of whether the use of transhumanist technologies to change human nature is an act of idolatry. The perfected *imago Dei* - the visible image of the invisible God (Colossians 1v15) - is Jesus, so it could be argued that transformation that leads to conformation to Christ is the kind of transformation that is seeking and worshipping God, rather than seeking to worship a material idol. This relates also to the idea that application of medical technology treats the body as an artefact to be engineered, rather than a personal subject in relationship with others and with God, an argument which has been advanced by the Anglican ethicist, Oliver O'Donovan.<sup>387</sup> In my view, O' Donovan's distinction between person and artefact is helpful from a perspective of a Christian ethical evaluation of biomedical technology for two reasons. First, it shows how the application of technology can seek to undermine the uniqueness of God's creative power, in favour of self-creation of the human body by humanity, where the body becomes an idol. Second, the treatment of the body as a "thing" rather than a person shows that indiscriminate application of biomedical technology to the body may be problematic for human dignity, even if not for personal autonomy. Even if a person chooses freely to apply some form of medical technology to themselves, it may undermine their dignity as a human being.

Yet some theologians have argued that the use of biomedical technology in human beings does not necessarily impair the expression of the *imago Dei* in humanity. Elaine Graham states that in a world where there is an evolutionary understanding of human life, concepts of humanity can no longer be fixed and absolute, and she argues that human beings enact the *imago Dei* when they engage in technological innovation.<sup>388</sup> Graham reflects that just as humans are created in the image of God, yet are continuous with the animal world, so humans have always been "mixed up" and hybridised with the technologies that they use, which have become a part of them. What is happening in the material world, and what it means to be human, does not detract from human spiritual

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<sup>387</sup> O'Donovan, *Begotten or Made*, pp. 1-6.

<sup>388</sup> Graham, "In Whose Image?" p. 65.

life, but it is a necessary pre-condition. She argues that, if the aspiration of being in the image of God is the Christian goal of conformation to Christ, then a right response to technology use would be humility, rather than hubris; in other words, technology would be used with care, in a way that respects the sovereignty of God and does not detract from God's ultimate purposes for humanity.

Peter Manley Scott has explored the relationship of the *imago Dei* to its social – and technological – context.<sup>389</sup> He engages with Heidegger's reflections on technology – that humanity is alienated by technique, that the world is ordered as a “standing reserve” for human use (which suggests the commodification of technology), and especially Heidegger's appeal to a god (“only a god can save us”) and to contemplation, as a means of “escaping” technology. He argues that Heidegger's appeal to a god is “too easy” and undercuts any notion of the social context of technology.

Scott asserts that the various approaches to the *imago Dei* have developed due to a complex interrelationship of tradition and context, an assertion borne out by the history of thought on the *imago Dei* as summarised earlier in this section. Scott argues that an approach to the *imago Dei* which stresses a fixed aspect at its core – which would apply to a substantive approach – means that the *imago Dei* is untouched by social contingency and historical becoming. Instead, he argues that temporality shows how important it is that human beings image God through their social contingencies.

He concludes that, in the past, theologians have abstracted the *imago Dei* from its theological and social context; however, a concept of *imago Dei* with social - and therefore spatial and temporal - dimensions is needed to make sense of a technological world. This seems a reasonable conclusion, given that technologies are developed and used within a particular human or social context, as I demonstrated in my overview of pharmaceutical medicine in

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<sup>389</sup> Peter Manley Scott, *Anti-Human Theology: Nature, Technology and the Post-Natural* (London: SCM, 2010), p. 93.

Chapter 1, and as will be seen in the scientific history relating to the two case studies.

Scott asserts that neither nature nor technology can offer redemption, and that creatureliness cannot be separated from technology,<sup>390</sup> an observation that is consistent with those of other theologians, such as Elaine Graham<sup>391</sup> and Celia Deane-Drummond.<sup>392</sup> He also makes the important observation that technology must not be anti-social – i.e. go against the grain of social progress and trends – nor must it be used as a *Deus ex machina* to solve social problems. In reply to this, it is a reasonable moral objective that technology should be used to ameliorate or resolve social problems, if appropriate, but that the objectives for technology use should be considered as part of public policy in an objective and holistic way, as researchers such as ter Meulen have recommended.<sup>393</sup> This is consistent with the potential of modern pharmaceutical medicine to benefit the whole of society by its effects on the health and wellbeing on individuals.

Theologians critical of transhumanism have suggested that the transhumanist view of humanity is characterised by a privatised, individualised attitude to human life, in which personal autonomy and exercise of the will concerning individual lifestyle choices plays a dominant part.<sup>394</sup> Transhumanism appears to place significant emphasis on the attributes of the individual human being, and the way in which they are used in the individual's interactions with the world. I would argue that this view of humanity is aligned largely with a substantive approach to the *imago Dei*, at the expense of the functional and relational approaches. I contend that, in *imago Dei* terms, a human person is more complex than the sum of his or her substantive attributes. Indeed, a person should be more than the sum of their substantive attributes, if they are to flourish in a world where they are one creature among many, a world where

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<sup>390</sup> Peter Manley Scott, *Anti-Human Theology*, p. 93.

<sup>391</sup> Graham, "In Whose Image?", p. 68.

<sup>392</sup> Deane-Drummond, *Theology and Biotechnology*, pp. 88-89.

<sup>393</sup> ter Meulen, "Human Enhancement: A Policy Perspective for the European Union", pp. 9-12.

<sup>394</sup> See, for example, Deane-Drummond, *Future Perfect?* pp. 168-169.

they must negotiate relationally with other creatures – human or otherwise – to achieve good ends which promote the flourishing of the whole creation.

This is in contrast with the human destiny that would be provided by radical transhumanist biomedical enhancements. This destiny is a realised eschatology – and indeed, a self-realised one – as described by Brent Waters.<sup>395</sup> According to Waters, the person who undergoes radical biomedical enhancement as an individualistic consumer choice may be trying to improve their experience as a human being. However, they are attempting to “complete” their experience as a human being, and achieve perfection through technological manipulation, rather than through being in Christ. However, from the perspective of the eschatological *imago Dei*, such a person is, in effect, “completing” their own history and, given that hope has a future dimension, they are giving up hope of any future personal transformation.

As mentioned earlier, the view of human destiny described by an eschatological *imago Dei* is a hope-filled way of being human, that frees humanity from self-preservation. In contrast, radical transhumanist enhancement, deployed with unbridled individual autonomy, is supremely about self-preservation, yet ironically, it denies any hope of a shared future destiny, which is a central feature of Christian eschatology.

This discussion shows that the different aspects of the *imago Dei* are important for a comprehensive understanding of theological anthropology now, and to determine what biomedical technologies might support a Christian approach to human flourishing in the future, in terms of valuing all people and the goods of human life for all. Proposed future transhumanist biomedical technologies overemphasise the substantive attributes of human life and have little sense of an eschatological perspective, with their individualistic, privatised approach to human life.

I will draw upon this analysis and critique when making an ethical comparison of current medical therapies and proposed future transhumanist biomedical enhancement technologies in Chapter 5. However, I will be assessing both past

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<sup>395</sup> Waters, *From Human to Posthuman*, pp. 123-125.

and future forms of technology to determine what factors might make them transhumanist in nature by means of objective criteria. I have already introduced some general criteria for transhumanist developments, as proposed by the literature of the transhumanist movement. However, in the light of these theological criticisms of transhumanism, I will now return to the theologically informed criteria that I introduced in Chapter 1. I will discuss and define the criteria in more detail, giving a rationale for why I chose them.

### 2.11. Theological Criteria for Transhumanist Developments

To determine a theological assessment of a proposed biomedical technology, the general, broad criteria for what might constitute a transhumanist technology would need to be overlaid by some specific theological criteria, which would facilitate a Christian ethical evaluation of those technologies.

Neil Messer has proposed four “diagnostic questions” about whether a biotechnological project is aligned with God’s saving work in the world, or not, and these would be applicable to transhumanist developments.<sup>396</sup>

- 1) Is the project good news for the poor?
- 2) Is the project an attempt to be “like God” (in respect of Genesis 3v5) or does it conform to the image of God? (Genesis 1v26)
- 3) What attitude does the project embody towards the material world? (including our own bodies)?
- 4) What attitude does the project embody towards past failures?

Messer’s criteria are useful because they have been proposed in the context of a study of ethical issues with biotechnology, and how biotechnology relates to the doctrine of creation, which is a good place to start to evaluate scientific interventions as material phenomena. The strengths of these criteria are that they are clearly ethical in nature (concerned with attitudes, justice and the goods of human life), and that they are firmly located in a Christian view of

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<sup>396</sup> Neil Messer, *Selfish Genes and Christian Ethics: Theological and Ethical Reflections on Evolutionary Biology* (London: SCM, 2007), pp. 229-235. These criteria have been published in a revised form in Neil Messer, *Respecting Life: Theology and Bioethics* (London: SCM, 2013), p. 37.

relationships between humanity and God, and within human society. The key weakness of Messer's criteria is that they do not explore the issue of personal autonomy and choice which, as noted earlier on in this chapter, is likely to be a significant factor in an ethical discussion of transhumanist biomedical technologies, and which is an important principle of medical ethics as it has developed to date.

Another approach to the theological evaluation of medical technologies is seen in Elaine Graham's analysis of transhumanism.<sup>397</sup> This identifies three theological issues – embodiment, autonomy and subjectivity – which should be explored in respect of new biotechnologies:

- 1) Autonomy – the problem with transhumanist medical technologies is that they enable unbridled autonomy in a negative manner.
- 2) Subjectivity – the problem with transhumanist medical technologies is that they are focused too much on the users' subjective experiences.
- 3) Embodiment – the problem with transhumanist technologies is that they interfere with the integrity of the individual body and can therefore have a disruptive effect on the corporate body – the community.

As criteria with which to assess transhumanist biotechnologies, Graham's three theological issues are not comprehensive in their scope but are significant in their impact. One concerns autonomy, which helpfully complements Messer's criteria, and which will be a useful tool to explore the role of autonomy in the use of transhumanist technologies. Another concerns subjectivity, which will be useful for exploring the phenomenon of individual experience and the objectification of the human body by technology, at the expense of the human as a personal subject. The third, on embodiment, overlaps with Messer's criteria, but introduces the helpful additional concept of corporate "embodiment" as the community.

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<sup>397</sup> Graham, "In Whose Image?", pp. 56-69.

The next section will provide a preliminary evaluation of the proposed transhumanist biomedical technologies listed earlier against these criteria.

## 2.12. Preliminary Evaluation of Transhumanist Developments

A previous section of this chapter outlined five future technological interventions that transhumanists have proposed. They are:

- 1) Medical nanotechnology – the use of microscopic particles, tools and robots to interact with the body for medical applications.
- 2) Genetic enhancements – including germ-line modifications.
- 3) Cybernetics – the use of prostheses and robotics to develop and enhance bodily function.
- 4) Cryonics – placing the human body in suspended animation using cryogenic techniques, so that a person can be revived in the distant future when radical new medical technologies are available.
- 5) Mind Uploading – where all the information in the human brain is uploaded onto a computer, in order that a person can live on “in silico” rather than in a biological body.

In previous sections of the chapter, it has been argued that approaches to transhumanism – philosophical, technological and ideological – are diverse and, although transhumanism is broadly aligned to secular modernity, the different approaches to transhumanism vary in their metaphysics and in their epistemology.

However, the various technologies cited by scholars as transhumanist technologies are different technologically too, and have different effects on, and implications for, the human person. So, for example, the technological resources and processes used to enable genetic enhancements are different from those required for mind uploading, and the specific implications for human life will be different. This section will look at these technologies, using the criteria developed in the previous section.

In terms of the general criteria for transhumanist technologies, derived from the transhumanist literature, all the transhumanist technologies described – medical nanotechnology, genetic enhancements, cybernetics, cryonics and mind-



uploading – fulfil the first two criteria, that each is a technology (a material means of effecting a task or process) and that it is a technology applied to the human person, to make a difference to human experience. Concerning the third criterion, that the technology is applied to the human person to improve human function, increase longevity and promote human flourishing, the situation is less clear. All these transhumanist technologies are certainly intended to have a beneficial effect on human function or longevity. However, because the interventions they propose are radical (some more so than others), it is less clear whether they can or will actually improve human flourishing, for reasons that will be explored in the forthcoming section. However, that the transhumanist technologies cited here fulfil these three criteria is largely unremarkable, as these criteria are themselves derived from the transhumanist literature.

However, whether the fourth criterion applies – that the human subject has autonomy in the use of the technology, and that the technology is not applied in a coercive manner – is debatable. Individual users of these technologies may have the autonomy to choose to use these technologies at the outset, with an informed understanding of the risks involved. This is no different to informed consent to established medical treatments and procedures in the current healthcare system. However, as discussed by Michael Burdett, transhumanist technologies have the potential to effect radical changes to the human person at will, which elevates personal choice to a level of significance that it has not previously had in healthcare.<sup>398</sup> The expansion of personal choice in the application of future radical technologies clearly has implications for the exercise of autonomy.

Consequently, if the consequences of the transhumanist technologies here are considered in more detail, concerns about autonomy and choice emerge. Medical nanotechnology is relatively unproblematic, although, as with all medical technologies that are highly specific in their biological actions, there may be unintended consequences, which may raise questions about the

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<sup>398</sup> Burdett, *Technology and the Rise of Transhumanism*, p. 5

ongoing autonomy of the subject. However, genetic enhancements may well be chosen freely by a person but, if they are germ cell modifications which affect the genetic profile of that person's offspring, then the person's children and subsequent generations will be affected. These offspring cannot exercise autonomy because they did not choose the enhancement, and the enhancement is therefore applied to them in a coercive way. Cybernetics raises the issue of whether the person has full control over their cybernetic components; if an in-grafted robotic arm was used to commit an offence, would it be the responsibility of the person, or a fault with the prosthesis? Lawyers might attempt to argue the latter, in the person's defence. With cryonics, a person might freely consent to being cryogenically frozen so that they could avoid death from an incurable disease and remain in suspended animation until a cure was discovered. However, their life in suspended animation would then be in the hands of others and they would have no autonomy or power of choice concerning the time and circumstances of their revival, if it happened at all. With mind-uploading, a person might freely choose the procedure, but the procedure is radical and irreversible, and may lead to unintended consequences because the person has a disembodied existence, and these could have serious repercussions for life choices and personal autonomy, as highlighted in the previous section on autonomy in this chapter.

These concerns with autonomy on application of transhumanist technologies align well with Sparrow's argument about the deficiency of medical intervention as a means of developing moral agency, in comparison with moral and cultural education. Sparrow argues that, because biomedical enhancement is a radical technical intervention, it is instrumentalist - a pragmatic means of achieving a specific outcome with no inherent moral value – and it treats the human body merely as an object to be manipulated. Sparrow therefore argues that medical enhancements reduce personal autonomy, as a component of moral agency, rather than enable it.

The use of medical enhancements in the wider social and cultural context also has implications for personal autonomy. Societal trends and peer pressure may coerce an individual to have an enhancement that they might not be happy with personally. If the use of a certain enhancement is almost universal in society

and the government recommends that enhancement because of its purported benefits for personal security, wellbeing and access to public services, it would be hard for an individual to choose not to have the enhancement, without good reason. This is analogous to, for example, the almost universal use of mobile phones in current society. In this situation, the use of medical enhancements by some individuals in the population may restrict the personal choices of other individuals. For example, if it was routine for all jockeys to have genetic enhancements that enabled them to have a small body size, significantly faster reactions and longevity and physical durability to enable them to have a racing career of over one hundred years, this would effectively restrict a career in horse racing to those who were thus enhanced, and would exclude those who were not.

Further ethical and theological concerns about transhumanism become apparent if transhumanist technologies are assessed theologically using Neil Messer's four "diagnostic questions".<sup>399</sup>

First, is the project good news for the poor? All the technologies described above – nanotechnology, genetic enhancements, cybernetics, cryonics and mind-uploading – would be potentially resource-intensive, both in terms of materials and technical expertise. Even if they were all technically feasible at present, they would be very costly and would not be realistically available to citizens all over the world, but only to the wealthiest citizens of Europe and North America. For example, cryogenic preservation is still at an experimental stage and the Alcor Life Extension Foundation of Scottsdale, Arizona, offers this service for (at the time of writing) a minimum of \$200,000.<sup>400</sup> Even relatively modest biotechnological interventions that are routinely available now are relatively expensive, compared to the small molecule medicines of the "therapeutic revolution" era of the twentieth century, and therefore realistically available only through the health services of first world countries. Swindells

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<sup>399</sup> Neil Messer, *Selfish Genes and Christian Ethics*, pp. 229-235.

<sup>400</sup> Alcor Marketing Information, <http://www.alcor.org/BecomeMember/scheduleA.html>, (accessed September 2017).

argues that neither government prohibition nor an unfettered free market for biotechnology will support equity of access to these technologies, but some form of compromise is needed, in terms of government funding support.<sup>401</sup> He also makes the important point that, like “hi tech” medicines and biotechnology at present, future transhumanist technologies will need to be distributed at scale for costs of the technology to decrease.

Furthermore, when considering the impact of biomedical technology on the poor, various other ethical factors come into play, in addition to the basic affordability of the technology. If biomedical enhancements were used to support personal and societal wellbeing, then they may be good news for the poor, but if they were deployed by those in power for exploitation of vulnerable sectors of society or for social engineering, they would not be good news for the poor. Biomedical enhancements would be good news for the poor if regulation and health service resource allocation is such that the same enhancements can be offered to all in a society on an equal basis, so that all had the same socio-political opportunities.

Second, is the project an attempt to be “like God” (referring to Genesis 3v5) or does it conform to the image of God? (Genesis 1v26). As previously discussed, the *imago Dei* may be described substantively, functionally, relationally or eschatologically, and has a dynamic dimension. However, the vision of human life promoted by transhumanism, with its focus on the individual attributes of the human being, is consistent with an approach to the *imago Dei* that is largely substantive, and which does not reflect other approaches to the *imago Dei*, and so provides a distorted view of the human being. Indeed, it is ironic that the transhumanism movement, which is in part predicated on the evolution of humanity, reflects a substantive approach to the *imago Dei*, bearing in mind that that such substantive approaches to the *imago Dei* are of less contemporary value, in part because of the insights of evolutionary biology.

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<sup>401</sup> Fox Swindells, “Economic inequality and human enhancement technology”, *Humana Mente Journal of Philosophical Studies*, 26 (2014), pp. 213-222.

As mentioned previously, the problems with transhumanism are: a) it is individualistic because it is concerned primarily with the attributes of the individual person (a similar criticism can be made of the substantive *imago Dei*); b) it focuses on human attributes, at the expense of other aspects of human life, such as relationships, culture and corporate identity and values, which are not simply based on individual attributes, and c) it provides an alternative, over-realised eschatology, which is excessively inward-looking and privatised and provides immortality now, but which does not deal with the reality of sin and human moral responsibility.

Moreover, Peters has argued that a major criticism of transhumanism is that it assumes that human nature is infinitely malleable and that the human being can be absolutely manipulated by technologies applied by humanity, to achieve the functional objectives of enhancement.<sup>402</sup> This would suggest that, according to Messer's criteria, transhumanist biomedical technologies are indeed an attempt to be like God, rather than to enable humanity to conform to the image of God. Some of the technologies described – for example, mind-uploading or cybernetics – represent highly visible and tangible attempts to manipulate human bodily life and to remake human being in their own image, rather than God's image.

Third, what attitude does the project embody towards the material world? (including our own bodies)? Earlier in this chapter, I outlined the significance of the body and bodily life in Christian theology and also referred to the material connotations of the *imago Dei* in Genesis 1v26. I have previously noted that transhumanists have differing attitudes to the material world.<sup>403</sup> Some transhumanists are materialists in that they see the functions of the physical human body as the sum of all reality. However, some transhumanists are also functionalists, who believe that human mental function constitutes the person, and must be instantiated in a physical, material medium, but not necessarily a

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<sup>402</sup> Ted Peters, "Perfect Humans or Trans-Humans?", in *Future Perfect?: God, Medicine and Human Identity*, edited by Celia Deane-Drummond and Peter Manley Scott (London: T and T Clark International, 2006), pp. 15-32.

<sup>403</sup> More, "Philosophy of Transhumanism", p. 13.

biological one. Some transhumanist scholars, such as Hans Moravec,<sup>404</sup> are unconcerned by the prospect of disembodiment, and are happy to rely on thought for identity (pattern identity) whereas others, such as Katherine Hayles,<sup>405</sup> see embodiment as an essential prerequisite of humanity, regardless of what other technologies might be employed for human enhancement.

The transhumanist technologies described here demonstrate this variation of views concerning embodiment. Medical nanotechnology and genetic enhancement are both technologies that elicit beneficial effects in and through the functioning of the human body and may be considered affirming of human embodiment. In fact, cryogenic preservation is concerned with preserving the human body at any cost, even when the body is threatened with incurable disease or apparently irreversible degeneration. On the contrary, however, cybernetics appears to be a technology that does not affirm the human body. The premise of cybernetics is that parts of the human body can be replaced by prostheses and robotic enhancements that will function better than – or differently to – the original biological body parts. For some transhumanism advocates, for whom personhood is largely related to functional ability, the concept of the cyborg – the human-robot hybrid – would be seen positively and would present no specific problems. Nevertheless, as Hayles observes, the concept of the cyborg destabilises established ways of understanding human ontology,<sup>406</sup> so might prompt some objections from Christian and other religious commentators on the grounds of natural law.

At the far end of the anti-embodiment spectrum is the proposed transhumanist technology of mind-uploading, where the information in a person's mind is uploaded onto a computer, so they can live life *in silico*, without a human body. With this technology, the human body is totally deprecated, and morphological freedom is prioritised over human embodiment. As noted above, transhumanists who advocate mind-uploading, such as Ray Kurzweil and Hans Moravec, deal with the problem of maintaining personal identity in a

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<sup>404</sup> Moravec, *Mind Children*, pp. 116-118.

<sup>405</sup> Hayles, *Virtual Bodies*, p. 1.

<sup>406</sup> Hayles, *Virtual Bodies*, p. 21.

disembodied existence by appealing to a distinction between *body identity*, where the person is defined by the material matter of their human body, and *pattern identity*, where a person is defined by their thought-patterns and processes. However, Kurzweil admits that disembodiment is problematic for human existence, given that many human experiences are essentially bodily experiences – for example, eating, sex and sport – and are meaningless without a body. Furthermore, as argued previously, his proposals for complex sensory interfaces to mediate these experiences to a disembodied mind are aspirational and overly optimistic.

Fourth, what attitude does the project embody towards past failures? From a Christian perspective, the most appropriate way for scientists and technologists to view past failures, especially those that have been exploitative or at great human cost, would be an attitude of humility to future endeavours. At first sight, this question seems to be pitching transhumanist hubris against Christian humility but a close inspection of the meaning and scope of humility as a Christian grace suggests that this issue is more complex. In her definition of humility, Helen Oppenheimer notes that pride is a sin, but humility is not so much a virtue as a grace (a gift from God).<sup>407</sup> She highlights the ambivalence of humility, drawing on Aquinas's assertion that it is possible to be proud of being humble, and she asks whether humility might be ruined by its attainment. She also notes the strange situation that, according to Matthew 23v12, the reward for humility seems to be exaltation, which suggests that humility might be a means to a non-humble objective, rather than a virtue in itself. Consequently, she wonders whether humility can ever be a lasting good of life. Helpfully, however, she identifies five important components of humility:

- 1) It should not be false,
- 2) It should not be about self-loathing,
- 3) It should be an objective lowliness – acknowledging one's unimportance as an individual, which paradoxically is important to God,

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<sup>407</sup> Helen Oppenheimer, "Humility", in *A New Dictionary of Christian Ethics*, edited by John MacQuarrie and James Childress (London: SCM, 1986), p. 284.

- 4) It should concern reverence in acknowledging glory not one's own (1 Corinthians 4v7),
- 5) It should be ultimately about agape – self-emptying for the sake of others (Philippians 2v5-11). There is a paradoxical self-confidence in this kind of humility, in that the individual can afford to take delight in attending to the needs of others (which would be a good motive for using biotechnology well according to Messer's fourth criterion).

In her essay on the grace of humility, Avril Cameron also highlights some of the paradoxes of humility.<sup>408</sup> Humility is self-effacing, and yet many occupations in life – for example, politics, acting and academic scholarship – necessarily involve self-promotion. Humility often has an element of display, and therefore it brings with it the danger of hypocrisy – if someone proclaims their humility by word or deed, then they are not being humble. Cameron wisely observes that, at the current time, with the cult of the individual so much part of western social and political life, the self is ostensibly exalted. However, this also means that the self is exposed and uncertain, and she cites the fact that many people do not have a sense of self-worth and may seek therapy for it. She concludes that true humility is concerned with knowing one's limitations and should be linked with a proper pride in one's capacity and agency, and that to achieve this takes real wisdom and knowledge. She also acknowledges that undue pride should also be tempered by the responsibilities of living in communities and not alone.

I would argue that the kind of humility needed to act responsibly in a technological world has components cited by both these scholars. Of prime importance is Oppenheimer's fourth element – humility is reverence in acknowledging a glory that is not our own – in other words, the detailed scientific processes underpinning the natural world, a world that was ultimately created by God, not humanity. A common theme in the Psalms is that a natural response of humanity to the created world is one of wonder and awe – as illustrated, for example, in Psalm 8 and Psalm 19. From this sense of awe would develop the response, as Cameron suggests, of knowing one's limitations when faced with the glory and mystery of the universe and also living

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<sup>408</sup> Avril Cameron, "On the Grace of Humility", *Theology*, CII (1999), pp. 97-103.



– and making biomedical decisions - as part of a community, rather than as an individual.<sup>409</sup> This kind of humility can be set in an explicitly Christian framework; Elaine Graham argues that, if the aspiration of being in the image of God is the Christian goal of conformation to Christ, then a right response to technology use would be humility, rather than hubris.<sup>410</sup>

However, a study of the various strands of transhumanism suggests that many of these aspects of humility are absent. On the contrary, main advocates of transhumanism speak in terms of throwing off the shackles of human limitation. More's famous "No more gods, no more faith...the future belongs to post-humanity," epitomises a human-centredness that allows no wonder or awe in response to a greater glory. Individualism and individualistic autonomy are an important part of the transhumanist endeavour, and these negate the humility of community living – and community bioethical decision-making. All the transhumanist technologies mentioned above could, depending on how they are used, represent the human Promethean desire to rebel against "given" human nature.

What conclusions can be drawn about these transhumanist technologies in the light of Elaine Graham's three theological concerns about transhumanism?<sup>411</sup> Her first concern is embodiment. The problem with transhumanist technologies, she states, is that they interfere with the integrity of the individual body and can therefore have a disruptive effect on the corporate body – the community.

In relating changes to the individual body to changes in the corporate body of the community, Graham wisely roots this discussion in the concept of the church as the body of Christ, as found for example in Romans 12v4-8, 1 Corinthians 12 or Ephesians 4v4-13. I would argue that her theological concern here is warranted with the transhumanist technologies being considered. Regardless of their specific objectives, all the transhumanist technologies described here – nanotechnology, genetic enhancements, cybernetics, cryonics

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<sup>409</sup> I have argued previously in this chapter that community is the proper context for autonomy in medicine.

<sup>410</sup> Graham, "In Whose Image?", p. 66.

<sup>411</sup> Graham, "In Whose Image?", pp. 57-67.

and mind uploading – affect the structure and functioning of the human body in one way or another, and bring about significant changes in human life because of this – in terms of longevity, freedom from disease, but also in terms of motor and cognitive function. Although these effects are primarily effects on the individual human body, they also have an impact on the corporate body of society, as previous discussions in this chapter on the social ethical implications of enhancement have shown – for example, the implications of biomedical enhancement for health and welfare provision, for working patterns, and for marriage as an important institution in human society. Given the discussion about embodiment earlier in this chapter, Graham’s concerns about the implications of transhumanist technologies on both individual and corporate bodily life are therefore justified.

Graham’s second point concerns autonomy. She states that a problem with transhumanist medical technologies is that they enable unbridled autonomy in a negative manner. This is partly true in that the radical nature of transhumanist technologies and their ability to make profound changes to the human experience makes personal choice a far more significant factor in decision-making about enhancements than it has been previously in healthcare. However, as argued earlier in this chapter, it is debatable whether personal autonomy can be maintained during all stages of technology use due to the nature of the technologies and their unintended consequences. It is not true, therefore, to say that transhumanist technologies enable “unbridled autonomy” Furthermore, transhumanist technologies need not be chosen in a “negative manner”. A person’s attitude to the use of technology is important, as seen in the discussion of Messer’s fourth diagnostic question above; an attitude of humility, rather than hubris, is more in keeping with scriptural descriptions of the wonder of creation (Psalm 8, Psalm 19), and the limits of human wisdom (Isaiah 55v8-9). Furthermore, there are many instances in medicine at present where biomedical technology can be intentionally adopted and used in a positive way, so this could equally apply to future technologies.

Thirdly, Graham warns about the problem of subjectivity, that transhumanist medical technologies are focused too much on the subjective experiences of the technology user. This seems to be a valid criticism of transhumanist

technologies – these technologies may be applied to individual bodies according to the individual’s will, to enhance subjective human experience. As previously discussed, absolute personal choice and autonomy in choosing enhancements is a major component of transhumanist thought,<sup>412</sup> and this has been strongly criticised by opponents of transhumanism, because of the potentially detrimental effects of the technologies on society, as a result of the whims and self-centred choices of individuals.<sup>413</sup> Transhumanism is concerned with individual human attributes, which reflects a largely substantive approach to the *imago Dei*, and this is at odds with current approaches to the *imago Dei*, which downplay the substantive, and emphasise functional, relational and eschatological elements.

However, the irony is that, although transhumanist technologies enhance personal, subjective experience, they are ultimately problematic because they objectify the human body, so that the body is in danger of becoming an artefact to be engineered and manipulated at will, rather than a human person.<sup>414</sup> In his exploration of the distinction between person and artifice in the application of reproductive technologies, Anglican theologian Oliver O’Donovan argues that the deployment of reproductive technologies runs the risk of making the human being a product or artifice to be engineered, rather than a person who is in relationship with a personal God.<sup>415</sup> The danger, therefore, is that biomedical technologies depersonalise the human person and objectify the human body, rather than allow the human being to have true personhood, as a personal subject.

### 2.13. Concluding Comments on Transhumanism

In this chapter, I have reviewed the various approaches to transhumanism, and outlined the major theological and ethical critiques of them. I have outlined general and specific (theological) criteria with which to assess transhumanist

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<sup>412</sup> More, “Transhumanist Declaration”, pp. 54-55.

<sup>413</sup> McNamee and Edwards, “Transhumanism”, p. 514.

<sup>414</sup> Miccoli, *Post-human Suffering and the Technological Embrace*, pp. 123-133.

<sup>415</sup> O’Donovan, *Begotten or Made?* pp. 1-6.

developments. I have shown, in a preliminary evaluation of various transhumanist proposals, that transhumanism is mixed – both in terms of its metaphysical and epistemological claims, and in terms of its ethical goods for humanity. Transhumanist technologies may ostensibly provide some benefits, in terms of improvement of human function and longevity, and these benefits may be proposed and applied with good intentions. However, on examination of the technologies according to some general and specific theological criteria by which transhumanist technologies may be evaluated, various problems and complexities emerge, and it is questionable whether these technologies truly enable human flourishing from a perspective of Christian social and medical ethics.

The next two chapters will describe the development of two important areas of therapeutics over the last sixty years during the “therapeutic revolution” era – the oral contraceptive pill and selective serotonin reuptake inhibitor (SSRI) antidepressants. Each chapter will evaluate these developments against the criteria for a transhumanist technology, as outlined above, and will consider the ethical issues presented by the therapeutic case and the extent to which it is a transhumanist development of its time, according to the criteria. The findings of the case studies will then inform an ethical re-evaluation of transhumanism. The next chapter presents a case study of the oral contraceptive pill.

## **Chapter 3 – Case Study – The Contraceptive Pill**

### **3.1. Introduction**

In the previous chapter, the origins, claims and ideas of the transhumanism movement were discussed, and a taxonomy of the transhumanism movement developed to illustrate the differing approaches and emphases of transhumanist scholars. The chapter then made a theological and ethical critique of transhumanist technologies, looking at social ethics and then four significant theological issues – autonomy, nature, embodiment and the *imago Dei*. The chapter cited and explained some objective criteria for the evaluation of biomedical technologies. These included general criteria, developed from the transhumanist literature, to determine whether a technology could be classified as transhumanist, but also specific, theological criteria, which Christian ethicists might use to evaluate a transhumanist technology, drawing on the work of Neil Messer and Elaine Graham. Finally, in the chapter, a preliminary assessment was made of some specific transhumanist proposals to date using these objective criteria.

The outline conclusion of the chapter was that, although transhumanist technologies were applied to human beings with the stated aim of improving human flourishing, the use of these technologies was in some tension with Christian theological ethics. This is because their effects on personal autonomy are ambivalent, they have a variable attitude to embodiment, and they reflect a substantive approach to the *imago Dei*, at the expense of other approaches to the *imago Dei* which would define humanity more fully. While transhumanist technologies have the capacity to enhance a person's subjective experience, they also have the potential to objectify the human body. Furthermore, although the transhumanist movement maintains that users of these technologies have autonomy in choosing and adopting them, there are potential ethical concerns surrounding their equitable use and attitudes to their use in society.

This chapter will present the first of two case studies of previous therapeutic developments, which took place during the “therapeutic revolution” years (1950-1990) – the development of the oral contraceptive pill, which was introduced in

1960. The first section of the chapter will describe the history of the oral contraceptive pill, discussing the events that led to its introduction and widespread use. The second section will discuss the effects of the pill on the lives of women and men, on marriage, and on society. It will then examine the Roman Catholic church's theological and ethical concerns with the pill following its introduction. Finally, the contraceptive pill will be assessed against the criteria for evaluation of transhumanist technologies developed in Chapter 2, to determine the extent to which, in its time, the pill could have been regarded as a transhumanist development, and to evaluate it from the perspective of theological concerns about transhumanist technologies.

### 3.2. The Development of Oral Contraception.

Although the practice of contraception has a long history, dating back to classical times,<sup>416</sup> the development of the oral contraceptive pill in the 1950s was highly significant, and has arguably represented a “contraceptive revolution”, for two reasons.<sup>417</sup> Firstly, the pill was the first contraceptive technology that enabled the technology for contraception to be separated from the sex act itself, enabling greater romance and spontaneity in sex. Secondly, with the pill, the method of contraception was controlled by the female partner.<sup>418</sup> This has enabled women to control their fertility and plan their families, in a way that had not been possible previously. Consequently, as well as its benefits to women, the contraceptive pill has had a significant impact on marriage, sexual politics and socioeconomic developments in the western world, which will be discussed later in this chapter.

The development of the pill was the result of a detailed understanding of the role of the sex hormones controlling the menstrual cycle – oestrogen and

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<sup>416</sup> Clive Wood and Beryl Suitters, *The Fight for Acceptance: A History of Contraception* (Aylesbury: Medical and Technical Publishing, 1970), pp. 202-223; Elizabeth Draper, *Birth Control in the Modern World* (London: Pelican, 1965), pp. 55-66.

<sup>417</sup> Angus McLaren, *A History of Contraception from Antiquity to the Present Day* (Oxford: Oxford University Press, 1990), p. 2.

<sup>418</sup> McLaren, *A History of Contraception*, p. 2.

progesterone – following the isolated organ experiments in the nineteenth century, and the popularity of “organotherapy” for sexual disorders in the early twentieth century.<sup>419</sup> Crucially, though, the development of the contraceptive pill as a marketed pharmaceutical product in the 1950s was only enabled by the ability of pharmaceutical manufacturers to produce these sex hormones synthetically, rather than from natural sources, and therefore to be able to produce them in large quantities,<sup>420</sup> a development that took place in the mid-twentieth century. The pill is significant in pharmacological therapeutics in that it was the first drug affecting the whole body ever to be given to a healthy population on a large scale.<sup>421</sup> Given its purpose and its mass-distribution, it is therefore not surprising that the oral contraceptive pill has had far-reaching consequences for human society and culture.

However, in the 1950s, research into contraception was seen as a disreputable business, which neither the government nor the pharmaceutical industry would fund, and the public were reluctant to accept contraception research as a legitimate and respectable scientific activity.<sup>422</sup> Consequently, the story of how the first oral contraceptive pill reached the market in 1960 is a remarkable one, involving three key protagonists.<sup>423</sup> Margaret Sanger was a socialist and feminist from a working-class background, who had imagined the benefits to modern society of a contraceptive pill as long ago as 1912. Sanger’s long-time friend, Katharine Dexter McCormick, was, by contrast, from a privileged background and was only the second woman to graduate from the Massachusetts Institute of Technology (MIT), where she studied biology. She subsequently married combine harvester millionaire, Stanley McCormick, and

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<sup>419</sup> Susan Davis, Dinatale I, Rivera Wall L. and Sonia Davison, “Postmenopausal Hormone Therapy: From Monkey Glands to Transdermal Patches”, *Journal of Endocrinology*, 185 (2005), pp. 207-222.

<sup>420</sup> Walter Sneader, *Drug Discovery: A History* (Chichester: Wiley, 2005), pp. 173-178.

<sup>421</sup> Robert Jutte, *Contraception: A History*, translated by V. Russell (Cambridge: Polity Press, 2008), pp. 288-290.

<sup>422</sup> Elaine Tyler May, *America and the Pill: A History of Promise, Peril and Liberation* (New York: Basic Books, 2010), p. 16.

<sup>423</sup> May, *America and the Pill*, p. 16.

gained control of his large fortune, which she invested in various feminist and philanthropic causes. Sanger and McCormick believed that there was a need for a form of contraception that could be “managed entirely by the women who used it”.<sup>424</sup> The third protagonist, Gregory Pincus, was a reproductive biologist. Pincus had previously genetically altered a rabbit embryo in the laboratory and, although this experiment had been a significant scientific advance, he had been reviled by the media as an unscrupulous eugenicist. He therefore had a dubious public image and he established the Worcester Foundation for Experimental Biology, as he was unable to get academic tenure at Harvard.<sup>425</sup> In 1950, Pincus was famously invited to a dinner party hosted by Margaret Sanger and she asked him just how much the development of an oral contraceptive might cost.<sup>426</sup> Pincus hazarded a guess at \$2 million dollars – a substantial sum of money at the time - and Sanger subsequently asked her friend, Katherine McCormick, for the money. Consequently, the contraceptive pill was developed with no state or public funding,<sup>427</sup> which is remarkable considering the collaboration and investment that would be required for such a medical development at the current time.

In order to set up clinical trials, Pincus approached John Rock, a Boston gynaecologist and devout Catholic, who had been treating women with oestrogen/progestogen combinations for menstrual disorders. Rock immediately saw that a contraceptive pill had potential benefits for society, and he regarded oral contraception as a “natural” form of contraception, which did not trouble his Catholic conscience, a stance that would eventually bring him into conflict with the Catholic Church. Because of the lack of public support for contraceptive research, Rock was unable to recruit many volunteers for his clinical trials, and so various involuntary subjects were recruited to the trials – including fifteen psychiatric inpatients from the Worcester State Hospital.<sup>428</sup> Although use of coerced subjects is not ethically acceptable by twenty-first century standards of

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<sup>424</sup> May, *America and the Pill*, p. 22.

<sup>425</sup> May, *America and The Pill*, p. 23.

<sup>426</sup> Jutte, *Contraception: A History*, p. 288.

<sup>427</sup> Draper, *Birth Control in the Modern World*, p. 220.

<sup>428</sup> May, *America and the Pill*, pp. 23-26.



clinical research, it was commonplace in the 1950s. In due course, in order to recruit larger numbers of subjects to the trials to improve their statistical power, Rock and his colleagues looked at recruiting for the trials in countries other than the United States. The island of Puerto Rico was chosen for the contraceptive trials as it had a dense population, living in poverty and disease, and therefore women there were longing for adequate birth control. In addition, there were no local laws against contraception, and birth control clinics had already been established in that country.<sup>429</sup>

The first oral contraceptive pill, Enovid, produced by G.D. Searle and Co, was approved by the Food and Drugs Administration (FDA) and introduced to the American market in 1960.<sup>430</sup> However, the oral contraceptive pill was considered too politically and morally sensitive for the British market at that time,<sup>431</sup> and Searle's product (branded Enavid in the UK) was not introduced into British family planning clinics until 1961.<sup>432</sup>

As might be expected with a hormonal medicine with a range of biological actions, the oral contraceptive pill has been shown to have various non-contraceptive beneficial effects too.<sup>433</sup> These include control of the menstrual cycle, alleviation of pre-menstrual tension (PMT), reduced incidences of ovarian, endometrial and colorectal cancer,<sup>434</sup> and possible beneficial effects on cardiovascular disease and depression.<sup>435</sup>

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<sup>429</sup> May, *America and the Pill*, pp. 23-25.

<sup>430</sup> McLaren, *A History of Contraception*, pp. 240-245.

<sup>431</sup> May, *America and the Pill*, pp. 32-33.

<sup>432</sup> Szarewski A and Guillebaud J, "Contraception: Current State of the Art", *British Medical Journal*, 302 (1991), pp. 1224-1226.

<sup>433</sup> Caserta D., Ralli E, Matteucci E, Bordi G, Mallozzi M and Moscarini M, "Combined oral contraceptives: health benefits beyond contraception", *Panminerva Medicine*, 56 (2014), pp. 233-44.

<sup>434</sup> Luis Bahamondes, Valeria Bahamondes and Lee P. Shulman, "Non-contraceptive benefits of hormonal and intrauterine reversible contraceptive methods", *Human Reproduction Update*, 21 (2015), pp. 640-651.

<sup>435</sup> Nicolas Mendoza and Rafael Sanchez-Borrego, "Classical and newly recognised non-contraceptive benefits of combined hormonal contraceptive use in women over 40", *Maturitas*, 78 (2014), pp. 45-50.

The contraceptive pill has been widely adopted in human society. In 1962, two years after the pill was launched, 2 million women in the United States were taking it; by 1964, 6.5 million American women were using oral contraception.<sup>436</sup> In 2010, it was estimated that 10.6 million women – 28% of all women of reproductive age who were using contraception – were taking the contraceptive pill.<sup>437</sup> This is despite varying pill use over the years, because of adverse events, and decreasing use of the pill in general over time due to recent development of long-acting injectable forms of hormonal contraception, and a revival of barrier contraception in the last twenty years, due to the risk of HIV and sexually transmitted diseases.

Following its introduction in the US, the pill began to be adopted in other developed countries. By 1966, Wood estimated that 10 million women in the world were taking the oral contraceptive pill.<sup>438</sup> Furthermore, in a review of British contraceptive practice in 1991, Szwedowski and Guillebaud estimated that, at that time, there were 3 million women in the UK alone using the oral contraceptive pill, and stated that the contraceptive pill was particularly popular with young women who had never had children.<sup>439</sup>

### 3.3. The Social & Cultural Impact of Oral Contraception

Compared to some other medical developments during the therapeutic revolution years of the twentieth century - for example specific antibiotic therapy or beta blockers for cardiovascular diseases – widespread use of the contraceptive pill has not led to an appreciable reduction in mortality. However, longitudinal data on mortality rates with the contraceptive pill published in 2010 suggest that the pill may be associated with a slight overall reduction in mortality, probably due to the reduction of the incidence of certain types of

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<sup>436</sup> Wood and Suttters, *The Fight for Acceptance*, pp. 202-223.

<sup>437</sup> Jo Jones, William Mosher and Kimberly Daniels, "Current contraceptive use in the United States, 2006–2010, and changes in patterns of use since 1995", *National Health Statistics Report*, 60 (2012), pp. 1-25.

<sup>438</sup> Wood and Suttters, *The Fight for Acceptance*, pp. 202-223.

<sup>439</sup> Szwedowski and Guillebaud, "Contraception: Current State of the Art", pp. 1224-1226.

cancer.<sup>440</sup> Nevertheless, the availability of the oral contraceptive pill has had positive effects on women's health in other respects, due to its multisystemic actions, and it has had far-reaching societal effects beyond the individual user - on sexual practices and politics, relationships and family roles, and laws and policies.<sup>441</sup> This section will explore these influences.

Social acceptance of oral contraception in western society was for a variety of socio-political and humanitarian reasons. Although Gregory Pincus and his colleagues explored the use of sex steroids for contraception as a scientific endeavour, they were very much a minority. On the contrary, Margaret Sanger and Katherine McCormick saw the pill in terms of its social effects and took a feminist view that oral contraception was a means of liberating women, and enabling women to take control of their contraceptive needs.<sup>442</sup> Sanger saw "birth control", as she termed it, as a working-class rebellion, a method of avoiding supplying the capitalist market with the human resources it needed for a workforce.<sup>443</sup> In 1950's America, as a result of the post-war baby boom, many were concerned about possible population explosion, and its consequent effects on poverty and social order.<sup>444</sup> The issue of population control was by no means new to western thought - in 1798, Malthus had brought the issues of excess fertility and over-population into public debate - but, in post-war America, this issue took on a new political urgency, because of the Cold War. Many US commentators reasoned that, if poverty could be alleviated through population control, then social unrest could be avoided, and the scourge of communism would be kept at bay. Conversely, however, some leading anti-communists in American society - for example, Senator Joseph McCarthy - saw contraception

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<sup>440</sup> Philip Hannaford, Lisa Iversen, Tatiana V. Macfarlane, Alison M. Elliott, Valerie Angus and Amanda J. Lee, "Mortality among contraceptive pill users: cohort evidence from Royal College of General Practitioners' Oral Contraception Study", *British Medical Journal*, 340 (2010): c927.

<sup>441</sup> Louise Tyrer, "Introduction of the pill and its impact", *Contraception*, 59 (1999), pp. 11S-16S.

<sup>442</sup> May, *America and the Pill*, pp. 1-5.

<sup>443</sup> May, *America and the Pill*, p. 16.

<sup>444</sup> May, *America and the Pill*, pp. 1-5.

as a communist conspiracy to weaken the country.<sup>445</sup> Others, for example, the gynaecologist John Rock, who conducted clinical trials on the pill, advocated the pill for humanitarian reasons.<sup>446</sup> As a clinician, Rock had seen first-hand the suffering of women both in childbirth and with debilitating menstrual disorders, and he wanted to do something to alleviate that suffering, and to give women control of their fertility, for their health and wellbeing. However, despite the health, social and political issues, for many of the women who took the pill, their motivation was purely personal – they simply wanted the convenience of being in control of their own fertility.<sup>447</sup>

Women have been the prime beneficiaries of the availability of the oral contraceptive pill. Louise Tyrer has claimed that being able to control the timing of childbearing has had positive consequences for women in respect of both mental and physical wellbeing.<sup>448</sup> The pill is a highly effective contraceptive and is convenient to use. It does not have the unromantic connotations of barrier and spermicidal methods of contraception,<sup>449</sup> and separates the contraceptive technology from the sex act, and so does not interfere with the intimacy of sex.<sup>450</sup>

Most significantly, the pill was the first contraceptive method where the woman had control over the contraceptive process and the man was correspondingly absolved – or sometimes deprived – of this responsibility.<sup>451</sup> This is the exact opposite of the era prior to the pill, where the standard method of contraception was condoms, which were sourced and used by the man. Indeed, as it was controlled by the woman, the pill was the “ideal” method of contraception that Margaret Sanger and Katharine McCormick had envisaged prior to its

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<sup>445</sup> May, *America and the Pill*, p. 42.

<sup>446</sup> McLaren, *A History of Contraception*, pp. 240-245.

<sup>447</sup> May, *America and the Pill*, pp. 50-52.

<sup>448</sup> Louise Tyrer, "Obstacles to use of hormonal contraception", *American Journal of Obstetrics and Gynecology*, 170 (1994), pp. 1495-1498.

<sup>449</sup> Tyrer, "Obstacles to use of hormonal contraception", pp. 1495-1498.

<sup>450</sup> May, *America and the Pill*, pp. 1-5.

<sup>451</sup> McLaren, *A History of Contraception*, pp. 240-245.

development.<sup>452</sup> Because it could be used by a woman without even the man's knowledge, the pill was liberating for women, and therefore celebrated by feminists.<sup>453</sup>

Nevertheless, while the pill has undoubtedly revolutionised women's lives and provided various benefits to women – both medical and non-medical – it has not always been seen in a positive light by women. The pill is a prescribed medicine so, although the woman can take responsibility for using hormonal contraception, she does not have complete autonomy to do so, as the pill must be prescribed for her by a doctor (and, in the early years of marketing the pill, this would most likely have been a male doctor). Consequently, feminists (ironically) have also criticised the pill, claiming that it has been used as a means of objectifying and medicalising the female body, and that use of the pill has led to the disembodiment of women.<sup>454</sup> Furthermore, it has been suggested that, far from emancipating women, the pill has, in fact, increased the extent to which women are exploited by men. With the arrival of the pill came what is referred to as the *coital imperative* – with the risk of unwanted pregnancy removed, there was no reason for a woman to withhold sex.<sup>455</sup> Consequently, in recent years, there has been considerable social pressure for young women to have penetrative sex with their partners in a way that was not expected in previous centuries.<sup>456</sup>

The development of the pill has also had a significant impact on the lives of men. May has pointed out that, for every woman taking the pill, there is at least one man involved too.<sup>457</sup> Use of the pill has enabled a man to enjoy sex, free of the risk of pregnancy, and to leave the responsibility of contraception to his

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<sup>452</sup> May, *America and the Pill*, p. 22.

<sup>453</sup> May, *America and the Pill*, p. 49; Betsy Hartmann, *Reproductive Rights and Wrongs: The Global Politics of Population Control* (Boston: South End Press, 1995), p. 189.

<sup>454</sup> Jutte, *Contraception: A History*, p. 111.

<sup>455</sup> Adrian Thatcher, *God, Sex and Gender: An Introduction* (Oxford: Wiley-Blackwell, 2011), p. 221.

<sup>456</sup> Thatcher, *God, Sex and Gender*, p. 214; Cook, *The Long Sexual Revolution*, pp. 1-3.

<sup>457</sup> May, *America and the Pill*, pp. 4-5.

partner. However, while some men liked the freedom of not being liable to impregnate their partner, some found the power and autonomy the pill gave to their partner an affront to their masculine ego.<sup>458</sup> For the man, loss of responsibility for contraception has been accompanied by loss of control of contraception. This loss of control has become even more apparent, in recent years, as contraceptive services have become more likely to be provided by female practitioners. Also, along with control over her fertility, the pill gave a woman control over her career and lifestyle, which her partner may have found threatening.

Consequently, the pill has had an impact on the marriage relationship, and roles in marriage. One popular argument often put forward is that the oral contraception has fuelled the sexual revolution which has taken place since the 1960s, and has undermined marriage as an institution.<sup>459</sup> However, this is controversial; historians have maintained that sexual behaviour remained conservative during the 1960s, that pre-marital sex was largely with intended spouses and that sexual excesses came to prominence in later decades.<sup>460</sup> The consensus view is that the “sexual revolution” would have taken place anyway, and that the pill was a trigger or catalyst.<sup>461</sup> Furthermore, there is little evidence from the history of the development of the pill that it was intended to bring about a sexual revolution. First, the pill’s protagonists did not intend to downplay the role of marriage and promote extramarital sexual activity. For example, John Rock was an influential advocate of the pill, yet he was a devout Catholic and a social conservative, who disapproved of sex outside marriage, and certainly did not envisage the use of the pill to facilitate multiple sexual relationships outside marriage.<sup>462</sup> Second, when the pill was first marketed, its use was restricted to married women only.<sup>463</sup> Third, in the mid-60s, marriage was still seen as the

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<sup>458</sup> May, *America and the Pill*, pp. 8-10.

<sup>459</sup> Jutte, *Contraception: A History*, p. 111; Hartmann, *Reproductive Rights and Wrongs*, p. 189.

<sup>460</sup> Hera Cook, *The Long Sexual Revolution: English Women, Sex and Contraception, 1800-1975* (Oxford: Oxford University Press, 2004), p. 271.

<sup>461</sup> Jutte, *Contraception: A History*, p. 111.

<sup>462</sup> May, *America and the Pill*, p. 122.

<sup>463</sup> May, *America and the Pill*, p. 59.

normal environment for sex; May cites a survey done at the University of Kansas in 1964, where the vast majority of women surveyed stated that they believed pre-marital sex was wrong.<sup>464</sup>

Another important question considered by social commentators concerning the pill is whether the availability of the pill has led to a greater level of sexual activity with multiple partners in society. The effect of the oral contraceptive pill on sexual behaviour has been debated ever since it was first introduced. Interestingly, however, there is very little information about this in the medical literature. A study was conducted by Linken and Wiener in 1970 looking at sexual behaviour in 44 males and 89 females.<sup>465</sup> This study found that the contraceptive pill was a predominant form of contraception in women who were classed as “promiscuous” (in this study, by the now conservative definition: more than one partner in a six-month period). However, the fact that the pill was the most commonly used form of contraceptive for all sexually active subjects in the study does not suggest a causal link between pill use and sexual activity with multiple partners, but rather that the pill is a form of contraception used by women who have sex with multiple partners. This is consistent with Helen Brooke’s observation that sexual activity with multiple partners is a symptom of some other underlying issue.<sup>466</sup> While the contraceptive pill is often associated culturally with sexual activity with multiple partners<sup>467</sup> and opponents of deregulation of the pill are often concerned about this,<sup>468</sup> there is no clear evidence that the use of the contraceptive pill has increased levels of sexual

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<sup>464</sup> May, *America and the Pill*, p. 80.

<sup>465</sup> Linken A. and Wiener R.S.P, “Promiscuity and contraception in a sample of patients attending a clinic for venereal diseases”, *British Journal of Venereal Diseases*, 46 (1970), pp. 243-246.

<sup>466</sup> Cook, *The Long Sexual Revolution*, p. 289.

<sup>467</sup> Selma Caal, Lina Guzman, Amanda Berger, Manica Ramos and Elisabeth Golub, ““Because you’re on birth control, it automatically makes you promiscuous or something”: Latina women’s perceptions of parental approval to use reproductive health care”, *Journal of Adolescent Health*, 53 (2013), pp. 617-622.

<sup>468</sup> Wynn, L. L. and James Trussell, “Images of American sexuality in debates over non-prescription access to emergency contraceptive pills”, *Obstetrics and Gynecology*, 108 (2006), pp. 1272-1276.

activity with multiple partners, above those that naturally occur. Indeed, the uncertain relationship between the advent of the contraceptive pill and the beginning of the so-called sexual revolution,<sup>469</sup> and the fact that sexual behaviours did not change radically in the years after the introduction of the pill,<sup>470</sup> suggest that the oral contraceptive pill, in itself, has not had a negative impact on human virtue, at least in terms of sexual behaviour.

Rather than facilitating sexual activity with multiple partners, oral contraception enables planned parenthood, which has the potential to promote marital stability through the health and wellbeing of both partners.<sup>471</sup> Furthermore, the availability of contraception may contribute to positive moral choices within marriage.<sup>472</sup> May contends that the pill has enabled couples to have good conversations about sex, arguing that the pill has liberated married sex, and contributed to a greater openness about matters relating to sex.<sup>473</sup>

In addition to its impact on human society and relationships, hormonal contraception has had an impact on the environment, due to excretion of synthetic steroids in oral contraceptives from the human body, leading to increased levels of these “endocrine disrupting” agents in the ecosystem, which might interfere with other life forms. At the current time, this phenomenon is well recognised and has been a subject of controversy, due to the potential effect on drinking water.<sup>474</sup> However, there are various chemical processes that can be

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<sup>469</sup> May, *America and the Pill*, p. 59.

<sup>470</sup> Cook, *The Long Sexual Revolution*, p. 271.

<sup>471</sup> Thatcher, *God, Sex and Gender*, pp. 218-219.

<sup>472</sup> Thatcher, *God, Sex and Gender*, pp. 218-219.

<sup>473</sup> May, *America and the Pill*, p. 159.

<sup>474</sup> Ian Falconer, Heather F. Chapman, Michael R. Moore and Geetha Ranmuthugala, "Endocrine-disrupting compounds: A review of their challenge to sustainable and safe water supply and water reuse", *Environmental Toxicology: An International Journal*, 21 (2006), pp. 181-191; Sarah Combalbert and Guillermina Hernandez-Raquet, "Occurrence, fate, and biodegradation of estrogens in sewage and manure", *Applied Microbiology and Biotechnology*, 86 (2010), pp. 1671-1692.



used to extract oestrogenic contaminants during the process of water purification.<sup>475</sup>

Along with Prozac and SSRI antidepressants, which will be discussed in the next chapter, the contraceptive pill is arguably the pharmaceutical product that has had the most impact on popular culture. Notwithstanding the debate about whether the pill caused the sexual revolution, the pill has become a powerful *symbol* of the sexual revolution and was associated with utopian dreams – or dystopian fears – that sex was being liberated from marriage.<sup>476</sup> Back in the 1960s, many women were enamoured of the idea of the pill – the legend of the pill – even if they did not actually take it.<sup>477</sup> The idea of the pill was as potent as the reality. Yet, despite the pill's promise of uninhibited sex, interestingly, the theme of sexual liberation as a result of the pill was not greatly developed in the films and popular culture of the time.<sup>478</sup> However, Cook has argued that the pill “precipitated a transformation in sexual mores” and that, by reducing the real, social and economic impact of pregnancy, the pill transformed attitudes to sexuality.<sup>479</sup> Similarly, May has described the pill as not simply a method of contraception, but “a flash point for major social transformation.”<sup>480</sup>

Unsurprisingly, then, because of its implications for marriage and the family, use of the contraceptive pill has become a matter of ethical controversy for the churches. The next section will discuss the Roman Catholic church's response to the development of hormonal contraception in the twentieth century.

### 3.4. Contraception and the Church

Because of the importance of procreation for marriage and family life, and the perceived moral implications of interfering with procreation, Christian churches

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<sup>475</sup> Carla Patricia Silva, Marta Otero, and Valdemar Esteves, "Processes for the elimination of estrogenic steroid hormones from water: a review", *Environmental Pollution*, 165 (2012), pp. 38-58.

<sup>476</sup> May, *America and the Pill*, p. 72.

<sup>477</sup> Cook, *The Long Sexual Revolution*, p. 282.

<sup>478</sup> May, *America and the Pill*, pp. 85-87.

<sup>479</sup> Cook, *The Long Sexual Revolution*, p. 7.

<sup>480</sup> May, *America and the Pill*, p. 168.

have historically been opposed to contraception. Childress reports that, prior to the twentieth century, Christian churches prohibited contraception on natural law grounds because procreation is an important end of marriage, and of sexual intercourse in marriage, and contraception prevents marriage being directed towards that natural end.<sup>481</sup> A discussion of natural law, and the problems associated with it, was presented in Chapter 2, and this section will describe how a natural law-based approach was used in the prohibition of the pill by the Roman Catholic Church.

The Roman Catholic Church, in particular, has trenchantly opposed the use of oral contraception throughout its history on natural law grounds, arguing that it prevents the outworking of the moral goods of marriage in procreation.<sup>482</sup> Other Roman Catholic concerns with contraception are that it dehumanises women, and reduces them to mere instruments of men's desire, and also that it introduces "moral deficits" and "sinful mentalities" because it encourages selfish behaviour. The Catholic Church described "the contraceptive mentality", as one of four "sinful mentalities", along with the hedonistic mentality, the consumer mentality and the anti-life mentality.<sup>483</sup> The 1995 papal encyclical *Evangelium Vitae* took an even stronger approach, describing contraception as a "culture of death".<sup>484</sup> Contraception is also prohibited because it is a sin against life; Roman Catholic theologians would argue that, because life begins with the fertilised egg, then some forms of contraception – those which prevent implantation of the fertilised ovum – are a form of homicide.<sup>485</sup>

To fully understand the Roman Catholic opposition to the oral contraceptive pill, it would be helpful to review the historical development of that opposition during

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<sup>481</sup> James Childress, "Christian Ethics, Medicine and Genetics", in *Cambridge Companion to Christian Ethics*, edited by Robin Gill (Cambridge: Cambridge University Press, 2001), pp. 288-289.

<sup>482</sup> Thatcher, *God, Sex and Gender*, p. 217.

<sup>483</sup> Thatcher, *God, Sex and Gender*, p. 224.

<sup>484</sup> Pope John Paul II, "The Gospel of Life: *Evangelium Vitae*", 1995, [http://www.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf\\_jp-ii\\_enc\\_25031995\\_evangelium-vitae.html](http://www.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_25031995_evangelium-vitae.html). (accessed March 2020).

<sup>485</sup> Vincent Genovesi, *In Pursuit of Love: Catholic Morality and Human Sexuality*, (Collegeville, Pa: Liturgical Press, 1996), p. 210.

the twentieth century. Roman Catholic opposition to artificial contraception grew stronger as the twentieth century proceeded. Following the publication of Marie Stopes' book *Contraception* in 1923, there was increasing public interest in contraception in Britain, and so the Church of England's position on contraception was considered by the 1930 Lambeth Conference of Bishops. This Conference approved the use of contraception in certain circumstances. The guiding principles were that contraception should only be used within marriage, and that contraception should not be used for reasons of "selfishness, luxury or convenience", but only when parents have a moral obligation to avoid parenthood. The conference asserted that abstinence was morally superior to contracepted sex, and that there should be a morally sound reason why abstinence is impossible.

The Roman Catholic Church responded rapidly with *Casti Connubi* ("On Chaste Marriage") which asserted robustly that all contraception was a vice opposed to Christian marriage, and that the only possible option for Catholic couples wishing to avoid parenthood was abstinence. However, in due course, the safe period (rhythm method) of contraception was permitted by Catholics, as it was not considered to be acting against nature. However, any human intervention that affects fertility can be regarded as a manipulation of the natural world.

The Church of England reaffirmed its position on contraception at the 1958 Lambeth Conference, where the Bishops argued that human beings are not bound by natural law because they are not wholly embedded in nature, but are also above nature, and transcendent.<sup>486</sup> While a human person is a child of nature, they are also, in a sense, a spirit standing outside nature – and so there is a sense in which sex is supranatural, rather than just natural. The 1958 Lambeth Conference therefore reaffirmed the position of the 1930 conference - that there were some circumstances in which contraception was acceptable.

It was into this religious landscape that the oral contraceptive pill was introduced in the 1960s. As stated previously, John Rock, the Catholic

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<sup>486</sup> Thatcher, *God, Sex and Gender*, p. 218.

gynaecologist involved with the clinical development of the pill, saw the pill as a “natural” form of contraceptive, that Catholics could use with a good conscience. Consequently, during the 60s, many Catholics hoped for a change of heart from their church concerning contraception. However, their hopes were dashed with the publication of the papal encyclical, *Humanae Vitae* in 1968, which upheld the Catholic church’s position on contraception.<sup>487</sup> *Humanae Vitae* specified that marital sex had two meanings: a) the reproductive, or procreative, meaning, and b) the personal, or unitive, meaning, and that there was an inseparable connection between them established by God - which humans could not interfere with using contraceptive technologies.<sup>488</sup> Indeed, the argument of the encyclical was that, since procreation was the natural purpose of intercourse, then anything that obstructs that purpose is intrinsically evil.

Yet, despite this strong prohibition, statistics on contraception published in the 1970s suggested that a significant proportion of Catholics ignored the church’s official teaching, and practised contraception anyway.<sup>489</sup> May has argued that many Catholics in the US ignored the church’s position on contraception in favour of simple economics and convenience.<sup>490</sup>

There are various problems with the prohibition of contraception on natural law grounds, as expressed by *Humanae Vitae*. Pope notes that *Humanae Vitae* has been criticised as an overly physicalist application of natural law which does not take into account the complexity of individual circumstances, the importance of mutuality and intimacy in marriage and the difference between valuing the gift of

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<sup>487</sup> Pope Paul VI, “On the Regulation of Birth: *Humanae Vitae*”, 1968, [http://www.vatican.va/content/paul-vi/en/encyclicals/documents/hf\\_p-vi\\_enc\\_25071968\\_humanae-vitae.html](http://www.vatican.va/content/paul-vi/en/encyclicals/documents/hf_p-vi_enc_25071968_humanae-vitae.html), (accessed March 2020).

<sup>488</sup> Thatcher, *God, Sex and Gender*, pp. 221-223.

<sup>489</sup> Christopher Langford, *Birth Control Practice and Marital Fertility in Great Britain* (London: London School of Economics, 1976), pp. 26-34, p. 51.

<sup>490</sup> May, *America and the Pill*, p. 122.

life in principle and requiring this value to be expressed in openness to conception at each sex act.<sup>491</sup>

Bernard Häring, one theologian who opposed the Catholic church on contraception, therefore did so on the grounds of totality.<sup>492</sup> Häring argued that biological functions could be subordinated to the good of the whole person and of community life, and therefore that contraception, as a biological intervention, had the potential to be ethically beneficial. Contraception, he argued, ensured marital stability and planned parenthood and so, in moral status, could be regarded as the equivalent of a blood transfusion, or the use of insulin in diabetes.<sup>493</sup>

A key consequence of the physicalist interpretation of natural law in *Humanae Vitae* is that it leads to an atomistic view of the sexual act, without acknowledging the broader, relational context of sex in marriage as a whole. The reason for this atomistic approach on the part of the Roman Catholic Church is because, according to natural law, the good ends of sex and marriage are procreation and childbirth, and each sex act always has the potential for conception.

Thatcher notes, however, that marriage is better seen as a totality which should be open to new life, and that sexual morality should be about the flourishing of the whole person, not just the status of sex acts.<sup>494</sup> He also notes that this was the stance taken by Anglican bishops by the 1958 Lambeth Conference when they affirmed that humans were not bound by natural law, because of their supra-natural self-transcendence, and that contraception was morally acceptable in certain circumstances. Anglican theologian Oliver O'Donovan summarised this issue well, stating that, "To break marriage down into a series

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<sup>491</sup> Stephen Pope, "Natural Law and Christian Ethics", in *Cambridge Companion to Christian Ethics*, edited by Robin Gill (Cambridge: Cambridge University Press, 2012), pp. 67-86.

<sup>492</sup> Thatcher, *God, Sex and Gender*, p. 218.

<sup>493</sup> Bernard Häring, "New Dimensions of Responsible Parenthood", *Theological Studies*, 37 (1976), pp. 120-132.

<sup>494</sup> Thatcher, *God, Sex and Gender*, p. 223.

of disconnected sexual acts is to falsify its true nature.”<sup>495</sup> In terms of human flourishing, O’Donovan’s argument is a valid one. It is ironic therefore that Catholic natural law objections to contraception insist that contraception is unnatural because of its suppression of procreation, and yet treat a marriage as a series of sex acts which do not represent the true nature of marriage, as an ongoing and integral relationship between a man and woman, and therefore treat the marriage in an “unnatural” manner.

Thatcher also notes the wider ethical implications of the Roman Catholic Church’s prohibition of contraception. There is no consideration that contraception might be used for a virtuous end; for example, a couple may postpone having children, in order to pay off their student debts.<sup>496</sup> Furthermore, he claims that Catholic arguments about moral deficits seem harsh and judgemental, and lead people to question the relevance of the church in modern society.<sup>497</sup> Thatcher has argued - reasonably, in my view - that the Roman Catholic Church has lost the respect of its members, because of its intransigent position on contraception and, for this reason, its theological insights, which are often of considerable depth, are overlooked.

The approach taken by *Humanae Vitae* of separating the procreative and the unitive functions of marital sex is problematic scientifically, as well. A basic understanding of the human reproductive system shows that the procreative and unitive functions of marital sex can be separated in some “natural” circumstances - for example, during the menopause, because of infertility or simply during the infertile times of the menstrual cycle – not just by artificial means - which undermines this argument as a prohibition of hormonal contraception.<sup>498</sup>

Another complicating factor is the notion that humanity may have a created role that is distinctive in creation and the natural order. As mentioned previously, at

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<sup>495</sup> Oliver O’ Donovan, *Begotten or Made?* (Oxford: Clarendon, 1984), p. 77.

<sup>496</sup> Thatcher, *God, Sex and Gender*, p. 226.

<sup>497</sup> Thatcher, *God, Sex and Gender*, p. 212

<sup>498</sup> Genovesi, *In Pursuit of Love*, pp. 205-210.

the 1958 Lambeth Conference, the Church of England Bishops argued that humans are not bound by natural law, because they are not wholly embedded in nature, but are also above nature, and transcendent.<sup>499</sup> Theologians have explored this complex relationship between humanity and nature. For example, John Polkinghorne states that humans are part of the natural world as creatures, yet distinct from it by virtue of their self-consciousness, and their awareness of the divine.<sup>500</sup>

Stephen Pope has argued that the Roman Catholic canonists have continued to invoke natural law, and to formulate their moral theology despite the significance of scientific developments of the nineteenth and twentieth centuries.<sup>501</sup> Pope contends – correctly, in my view, given the current cultural context – that with a simplistic natural theology, as opposed to a Thomist understanding of natural law, creation tends to be seen in only impersonal terms, as a machine for processing and constructing moral precepts. This, however, is inimical to the notion that human beings are personal beings, created by a personal God, and are called to have a personal – and moral – relationship with God and with each other.<sup>502</sup> This argument is especially relevant for applying natural law to medical technologies that intervene in human reproduction. Consequently, in my view, the physicalist interpretation of natural law in *Humanae Vitae* ultimately presents a deficient view of marriage, in the way it regards sex acts in marriage on an individual basis and does not place them within the broader context of the marriage relationship as a whole.

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<sup>499</sup> Thatcher, *God, Sex and Gender*, p. 218.

<sup>500</sup> John Polkinghorne, *Science and Theology: An Introduction* (London: SPCK/Fortress, 1998), p. 63.

<sup>501</sup> Stephen Pope, "Theological Anthropology, Science, and Human Flourishing", in *Questioning the Human: Toward a Theological Anthropology for the Twenty-First Century*, edited by Lieven Boeve, Yves De Maeseneer and Ellen Van Stichel (New York: Fordham University Press, 2014), pp. 13-19.

<sup>502</sup> Eric Mascall, *The Importance of Being Human: Some Aspects of the Christian Doctrine of Man*, (Oxford: Oxford University Press, 1959), pp. 1-18.

On the contrary, the developers of the pill - and, indeed, other voices in society at the time - saw the potential of the pill to improve the human condition, and provide real ethical benefits for individuals, and for society. Conversely, there has been little evidence that the pill has actively led to unethical behaviour in human society, over and above routine ethical variants in fallen humanity, or has been the sole factor in the marginalisation of marriage as a human institution.

As discussed in Chapter 2, Ronald Bailey, a supporter of transhumanism, points out that the application of biomedical technology does not preclude virtuous moral behaviour.<sup>503</sup> A similar argument can be applied to the use of the contraceptive pill in the context of a loving, sexual relationship. Humans have not necessarily become less moral or loving as a result of the introduction of hormonal contraception.

### 3.5. The Contraceptive Pill & Transhumanism

In this section, the contraceptive pill – its features and its impact on society - will be assessed against the criteria for evaluating a transhumanist development that were set out in the previous chapter. As discussed in Chapter 1, medical technologies may have benefits for humanity but may also be associated with risks and unintended consequences which can have a significant wholesale impact on society. Therefore, medical technologies should not be accepted uncritically simply because they exist and are available but should be evaluated carefully from a perspective of Christian theological ethics.

One factor that should be considered is the motivations of those people who were responsible for the development of the contraceptive pill. Is there any evidence that Sanger, McCormick, Pincus or Rock saw the contraceptive pill as

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<sup>503</sup> Ronald Bailey, "For Enhancing People", in *The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology and Philosophy of the Post-Human Future*, edited by Max More and Natasha Vita-More (Chichester: Wiley-Blackwell, 2013), pp. 331-332.



a “transhumanist” development - something that would have a significant impact on human flourishing and society, not just on individual human lives?

It is well recognised that both Margaret Sanger and Katharine McCormick were motivated to support the development of the contraceptive pill because of their feminist ideology, and they believed that women should have the capacity of choice about fertility and childbirth.<sup>504</sup> Sanger, especially, was motivated by her deeply-held political beliefs concerning social justice and equality, and had a far-reaching understanding of the implications of birth control for humanity. As long previously as 1912, she said that she saw birth control as about “voluntary motherhood”, not necessarily contraception, a view for which she was branded as a eugenicist.<sup>505</sup> Furthermore, the controversy caused by the distribution in England in 1923 of Sanger’s pamphlet on birth control demonstrates that her views were radical at the time.<sup>506</sup> Sanger expressed her vision, writing to McCormick, saying,

“I consider that the world and almost our civilisation for the next twenty-five years is going to depend upon a simple, cheap, safe contraceptive to be used in the poverty-stricken slums, jungles and among the most ignorant people. I believe that now, immediately there should be national sterilisation for certain dysgenic types of our population who are being encouraged to breed and would die out were the government not feeding them.”<sup>507</sup>

Gregory Pincus, too, wanted to change the natural order, through the development of new scientific possibilities for animal and human life. Because his work was scientific, its implications for “nature” were more clearly in view for

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<sup>504</sup> May, *America and the Pill*, pp. 20-21.

<sup>505</sup> Sunny Daly, *Changing Images of the Birth Control Pill 1960-1973: A Social History of the Pill in America* (Saarbrücken: VDM Verlag Dr Muller, 2008), p. 12.

<sup>506</sup> Stephen Brooke, *Sexual Politics: Sexuality, Family Planning and the British Left from the 1880s to the Present Day* (Oxford: Oxford University Press, 2011), p. 49.

<sup>507</sup> May, *America and the Pill*, pp. 20-21.

contemporary society, and this earned him the opprobrium of the academic community, the media and wider American society.<sup>508</sup>

Yet there is nothing to suggest that, in wanting to make a positive improvement to human flourishing, the protagonists wanted to destabilise the sexual and marital norms of society. As previously argued, Rock and Sanger did not intend to promote sexual licence and to fan the flames of a sexual revolution. Sanger and McCormick were seeking social justice and the improvement of society, as a whole – and both these objectives are consistent with Christian social ethics. Furthermore, notwithstanding his social conservatism, John Rock, the prominent clinical trialist in the development of the pill, was clearly motivated by his duty as a doctor to alleviate human suffering and improve the lives of his patients and saw the pill as a positive advance in that respect, and one that went beyond the remit and limits of interventional medicine at the time.<sup>509</sup>

The stance of the protagonists is remarkable given government and scientific opposition to contraceptive research at the time, concerns in society about contraception as a legitimate social issue and about possible eugenic consequences - and, of course, the Roman Catholic Church's doctrinal opposition to artificial contraception. However, the development of the contraceptive pill should also be considered in the context of the whole history of therapeutics. As discussed in Chapter 1, the role of luck, or "serendipity" as the pharmacological literature describes it, in drug discovery is well-recognised,<sup>510</sup> and many new drugs have found their way to the market by a process of coincidences and unintended consequences.<sup>511</sup> The development of the pill was, in many respects, a notable exception in that it was developed in such an intentional way. Because of the "serendipity" factor in drug

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<sup>508</sup> May, *America and the Pill*, p. 21.

<sup>509</sup> May, *America and the Pill*, p. 122.

<sup>510</sup> Brian Block, "Are scientific discoveries the result of good luck? An analysis of some pharmaceutical discoveries between 1920 and 1945", *Pharmaceutical History*, 34 (2004), pp. 59-64; Thomas Ban, "The Role of Serendipity in Drug Discovery", *Dialogues in Clinical Neurosciences*, 8 (2006), pp. 335-344.

<sup>511</sup> For example, cimetidine in the treatment of ulcers (as mentioned in Chapter 1), or captopril for the treatment of hypertension.

development, the motivations of the developers must be regarded as a subjective, secondary measure of whether a medicine was indeed a transhumanist development of its time. The objective criteria, as previously outlined, will provide a better foundation to determine whether a development may be classed as transhumanist and for discussion of the relevant issues pertaining to theological ethics.

Another issue that should be acknowledged is the diverse nature of the transhumanist movement, and the broad definition of a transhumanist technology. As I argued in the previous chapter, transhumanist scholars can be delineated into three different groups – philosophical transhumanists, who see the use of transhumanist technologies as the basis of a good way or rule of life; technological transhumanists, who are interested in the technological possibilities of transhumanism, but possibly at the expense of ethical implications, and ideological transhumanists, who are interested in biotechnological enhancements, as a means of exploring an ideological agenda. Analogously, I would argue that advocates of the contraceptive pill can be similarly grouped into, a) those who had a therapeutic agenda – such as John Rock, with his concerns for the humanitarian impact of oral contraception, and its effects on the health and wellbeing of women; b) those interested primarily in the technology, for example, Gregory Pincus, and c) those with an ideological agenda, such as Margaret Sanger and Katharine McCormick, with their feminist principles. Furthermore, the contraceptive pill has an impact on human life at all these levels – therapeutic, technological and ideological – which suggests that it has the characteristics of a “pre-transhumanist” medical technology.

### 3.6. Evaluation of the Contraceptive Pill Against Transhumanism Criteria

I will now evaluate the contraceptive pill from the perspective of the objective criteria described in Chapter 2. As explained previously, the general criteria for a transhumanist biomedical technology, used here to determine whether the technology is transhumanist in character, are those derived from the literature of transhumanism, and therefore reflect the understanding of these technologies

by advocates of transhumanism themselves. These criteria are very broad and all-encompassing.

First, a transhumanist development is a technology<sup>512</sup> – a material means of effecting a task or process, which will include any physical or chemical reaction or intervention (including pharmacological therapeutics) but may also include processes, policies and organisational methods.<sup>513</sup> The contraceptive pill is a form of chemical or pharmacological intervention, and so is a technology. Furthermore, while the components of the contraceptive pill are analogues of natural sex hormones, in the pill, they are synthetically produced and are introduced into the body artificially to elicit an effect. This undermines John Rock's view that the contraceptive pill was a "natural" product, whose use should be acceptable to the Roman Catholic church. Therefore, the contraceptive pill is undoubtedly a technology according to this criterion.

Second, a transhumanist development is a technology that is applied to a human person to exert its effect.<sup>514</sup> At the core of transhumanism is the transformation of human biological life and experience, and the improvement of human society. Pregnancy is part of normal human function rather than a disease or disorder, and this has implications for the type of technological intervention that the pill is. Consequently, the pill is not therapeutic, because it is not taken primarily to restore human function in a person who is dysfunctional (although it has some therapeutic applications). Nor is the pill prophylactic in the true sense, because it is not being taken to prevent an illness or an adverse event. Consequently, I would argue that the ability to control fertility and avoid pregnancy for social reasons is an enhancement of normal human function. Furthermore, the use of the contraceptive "enhancement" has a wider impact than just on the woman taking the pill – as discussed, it affects her partner, and

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<sup>512</sup> Max More, "Philosophy of Transhumanism", in *The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology and Philosophy of the Post-Human Future*, edited by Max More and Natasha Vita-More (Chichester: Wiley-Blackwell, 2013), p. 13.

<sup>513</sup> Nicholas Bostrom, "Transhumanist Values", *Journal of Philosophical Research*, 30 (2005), p. 3.

<sup>514</sup> World Transhumanism Association, "Transhumanist Declaration", pp. 54-55.

widespread use of the pill will have a wholesale effect on human society. The pill therefore fulfils this second criterion in that it is a technology that exerts its effects by being applied to the human person.

Third, a transhumanist development is a technology that is applied to the human person to promote human flourishing, by improving human function, or increasing longevity.<sup>515</sup> As argued earlier in this chapter, the contraceptive pill has only a modest effect on longevity, but there are many health and social benefits of the contraceptive pill to human life. First, the pill has positive effects on human life and welfare that were envisaged by those who developed it. As with other forms of contraception, the pill allows a couple to make positive moral choices about when to have children and how many to have. Moreover, the pill enables a woman to have control over her body, which will have emotional and medical benefits for her. It will also contribute to the emotional wellbeing of the whole family which, in turn, will contribute to the stability of society. In this respect, the pill is a “moral enhancement” in that enables people to make good personal lifestyle choices. Second, as mentioned earlier, the pill has additional health benefits which are unrelated to its contraceptive effects, which include control of the menstrual cycle, reduced incidence of pre-menstrual tension, increased bone density (thus reducing the risk of fractures), among others. These health benefits constitute unintended consequences that were not considered when the pill was first launched but which have emerged in the decades since. Third, the pill also reduces the emotional and socioeconomic burden of unwanted pregnancy. Furthermore, as mentioned previously, the contraceptive pill was the first drug affecting the whole body ever to be given to a healthy population on a large scale. There is therefore considerable evidence that the contraceptive pill has indeed had a positive effect on human flourishing on a large scale and has realised some of the aspirations of its developers.

Fourth, with a transhumanist development, the human person should have autonomy in the use of the technology – in other words, the technology is not

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<sup>515</sup> World Transhumanism Association, “Transhumanist Declaration”, pp. 54-55.

being applied in a coercive way.<sup>516</sup> When it was first launched, the contraceptive pill was hailed as the ideal means to enable a woman to exercise choice about sex and pregnancy and for couples to exercise choice about family planning.<sup>517</sup> At first sight, therefore, the pill has had a positive effect on the exercise of personal autonomy, defined in Chapter 2 as uncoerced self-determination. However, a closer examination of the social impact of the contraceptive pill indicates that the introduction of the pill has, in fact, had an ambiguous effect on personal autonomy, and in some respects has taken choices away as well as enabled them.

The contraceptive pill has limited human choice and freedom in several ways. As discussed in this chapter, the use of the contraceptive pill by his partner has the potential to take choices about contraception away from the man in a relationship because, with the pill, the woman has control over the means of contraception, and the timing of pregnancy. Also, the excretion of synthetic steroids into the environment by users of oral contraceptives may mean that individuals other than pill users and their partners are exposed to these substances and their potentially harmful effects without their knowledge or consent.

There have also been concerns in the past that the contraceptive pill has been distributed in a coercive way in some third world countries. In the mid-60s, the Johnson administration made population control a key feature of the US government's foreign aid policy, and American foreign aid programmes often included contraception services.<sup>518</sup> However, US-funded population control programmes in the developing world have been criticised for being examples of American imperialism, since the contraceptive pill was developed and marketed largely from the United States.<sup>519</sup> In addition, these programmes have been

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<sup>516</sup> More, "Philosophy of Transhumanism", p. 13.

<sup>517</sup> McLaren, *A History of Contraception*, p. 2.

<sup>518</sup> May, *America and the Pill*, p. 43.

<sup>519</sup> See May, *America and the Pill*, pp. 23-25. May states that the development of the oral contraceptive pill is essentially "an American story". However, given the involvement of Schering and Bayer (Germany) in the development of oral contraceptives, and the rapid launch of the Searle product and others in Britain

criticised from a feminist perspective. For example, Hartmann has argued that, in developing countries, women have often not been adequately screened for suitability to take the pill, that the side-effects of the pill have been trivialised and that women have not been adequately informed of the risks of taking the pill.<sup>520</sup> Furthermore, she has identified a patronising attitude with US-funded population control programmes, where there is an underlying assumption that only American (white, middle-class, male) gynaecologists can possibly be qualified to give contraceptive advice to women in the third world. These factors have all affected the extent that women in developing countries can exercise true informed consent when offered the contraceptive pill.

In fact, women themselves may experience a loss of autonomy or personal choice because they are taking the contraceptive pill. Women are dependent on a doctor or healthcare professional to prescribe the pill, and feminists have argued that the pill has therefore “medicalised” women and their fertility and made them the subject of health service intervention and assessment.<sup>521</sup> This is especially ironic given the fact that, as stated earlier, pregnancy is not a disease or disorder. Furthermore, as mentioned previously, the pill has introduced into society the concept of the “coital imperative” - if a woman is on the pill, and the risk of unwanted pregnancy is removed, there is no apparent reason for her to withhold sex.<sup>522</sup> Consequently, in recent years, there has been considerable social pressure for young women to have penetrative sex with their partners in a way that was not expected in previous centuries.<sup>523</sup> Because of the pill, women may be coerced into sexual relationships that they might not otherwise have, which undermines their personal autonomy.

In any case, when considering the contraceptive pill and its effects on personal autonomy in the context of the sexual relationship, the ambiguous nature of

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in 1961, I would contest this claim, which could itself be regarded as American imperialism.

<sup>520</sup> Hartmann, *Reproductive Rights and Wrongs*, pp. 189-219.

<sup>521</sup> Jutte, *Contraception: A History*, p. 111.

<sup>522</sup> Thatcher. *God, Sex and Gender*, p. 221.

<sup>523</sup> Thatcher, *God, Sex and Gender*, pp. 214-216; Cook, *The Long Sexual Revolution*, pp. 1-3.

sexual desire itself with respect to autonomy must be acknowledged.<sup>524</sup> On one hand, sexual desire is a pleasurable response to human beauty and physical attractiveness, and must be regarded as good, because of the goodness of creation (Genesis 1). On the other hand, however, David's desire for Bathsheba (2 Samuel 11) led him to sin – against her, against her husband, and ultimately against God. The crux of this ambiguity is that sexual desire is about abandonment and loss of self-control – effectively, the surrender of personal autonomy - but Christianity, paradoxically, has emphasised the importance of controlling this desire. One cannot give oneself up to desire and control that desire at the same time. Consequently, sexual desire has the capacity to be both a virtue and a vice – and the reality is that sexual desire is on a moral continuum and can be good or bad depending on the circumstances. This issue has probably been at the root of the uneasy relationship between sexual desire and spiritual desire which, notwithstanding the implications of apophatic theology relating to desire,<sup>525</sup> has led to some of the ascetic and dualistic views of spirituality that were common in the Patristic era and later.<sup>526</sup> Furthermore, Christian mystics - for example Teresa of Avila – who have used the language of sexual desire to express their love for God, have been treated with suspicion by the Western church.<sup>527</sup> With a long history of tension between bodily desire and spiritual life in Christianity, it is especially interesting that, in their pronouncement about contraception at the 1930 Lambeth Conference, the Church of England Bishops – men not generally bound by a vow of celibacy -

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<sup>524</sup> Thatcher, *God, Sex and Gender*, pp. 57-69.

<sup>525</sup> Pseudo-Dionysius, the writer originally assumed to be Dionysius the Areopagite (Acts 17v34) saw God in apophatic terms, describing him as reaching out to his creatures, and yet returning to himself, a motion that is essentially one of erotic desire. Correspondingly, Pseudo Dionysius described the ecstasy of the believer, whose soul goes out of itself and is united with the divine. For Pseudo Dionysius, the ecstasy of the believer is about love and union, erotic love is a legitimate response to the divine and is centred on the object of longing (i.e. God) (see Andrew Louth, *The Origins of the Christian Mystical Tradition: From Plato to Denys* (Oxford: Oxford University Press, 1981), pp. 154-173.

<sup>526</sup> Philip Sheldrake, *Befriending our Desires* (London: Darton, Longman and Todd, 1994), pp. 54-57.

<sup>527</sup> Sheldrake, *Befriending our Desires*, p. 56.



advised that abstinence is preferable to contracepted sex. The question is whether this advice was based on natural caution, given their knowledge of the complexity of the Christian teaching and tradition in this area, or whether it was due to negative, repressive personal attitudes to sex on their part.

In Chapter 2, I defined autonomy as non-coerced self-determination “to be one’s own person, to be directed by ...desires... that are not simply imposed externally upon one but are part of what can somehow be considered one’s authentic self.”<sup>528</sup> According to this definition, self-abandonment to sexual desire is not loss of autonomy if the desire is an expression of the person’s authentic self. However, as Christman points out, if the desire is a product of “addiction” – for example, drug addiction - the pursuit of that desire may not be a truly autonomous activity because it is not an expression of the authentic self.<sup>529</sup> This might also apply to sexual desire, for example, in extreme cases of sexual addiction. In any case, the internal factors affecting self-determination, as discussed in Chapter 2, in the context of sexual relationships must be considered when evaluating how the use of the contraceptive pill might affect personal autonomy.

There is also the question of how autonomy might be used. The contraceptive pill has certainly enabled couples to have more choice about family planning. But, during the last fifty years, has the freedom provided by the contraceptive pill been used to enable people to make wise choices about family planning for the good of human welfare, or to pursue selfish desires and aims, at the expense of humanity as a whole? As stated earlier, there is little evidence that the pill has increased the incidence of sexual activity with multiple partners in society. Furthermore, some theological responses to contraception, such as that of Bernard Häring, have suggested that planned parenthood has positive

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<sup>528</sup> Christman, “Autonomy in Moral and Political Philosophy”, Stanford Encyclopaedia of Philosophy (2015), <https://plato.stanford.edu/entries/autonomy-moral/>. (accessed April 2019).

<sup>529</sup> Christman, “Autonomy in Moral and Political Philosophy”, (accessed April 2019).

moral value in that it can uphold good ethical decisions and moral agency in the individuals concerned.<sup>530</sup> However, the technology itself is neutral in ethical terms.

Consequently, although use of the contraceptive pill may, at first sight, enhance personal autonomy for the user, I have shown here that use of the contraceptive pill has ambiguous effects on autonomy, in a similar way as future transhumanist technologies may do, as discussed in the previous chapter.

However, to determine a theological ethical view of the technology, these broad general transhumanist criteria would need to be overlaid by some specific criteria for how a technology might be regarded by theological ethics. How does the contraceptive pill, as a medical technology, evaluate against Neil Messer's diagnostic questions about the ethical implications of biotechnology?

First, is the contraceptive pill good news for the poor? McLaren has argued that contraception has enabled women to be in control of their working life, as well as their sex life and their family life.<sup>531</sup> There is evidence that the contraceptive pill has had an impact on female poverty and hardship. In an analysis of US census data from 1960 to 1990, Browne and LaLumia demonstrated that access to the oral contraceptive pill from the age of 20 has reduced subsequent poverty among women due to unplanned pregnancy and childbirth, regardless of employment status.<sup>532</sup> In theory, the pill has enabled women to make more choices about their working lives, to achieve career ambitions and gain a foothold in industries that have typically been male-dominated – all with wider societal implications, and potential benefits in terms of economic growth. There is little direct evidence to show that this is the case, but this theory is supported by Swarewski and Guillebaud's 1991 review of contraceptive use in Britain,

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<sup>530</sup> Häring, "New Dimensions of Responsible Parenthood", pp. 120-132.

<sup>531</sup> McLaren, *A History of Contraception*, pp. 240-245.

<sup>532</sup> Stephanie Browne and Sara LaLumia, "The effects of contraception on female poverty", *Journal of Policy Analysis and Management*, 33 (2014), pp. 602-22.

which showed that the contraceptive pill was particularly popular with young women who had never had children.<sup>533</sup>

As noted previously, there have been some ethical concerns about the distribution of hormonal contraception in the developing world, concerning whether people in those countries have real freedom of choice when offered contraception services. There is evidence to suggest that, where contraceptive services are available in developing countries, they have significant effects on reducing health and welfare costs in those countries.<sup>534</sup> These benefits arise from the reduction of the population, which alleviates poverty and famine, and which also benefits the environment and enables development to proceed more efficiently in those countries. They also arise from the positive effects of the pill on the health of women, sparing them from unwanted childbirth. However, as discussed in Chapter 2, a key factor in whether biomedical technologies are good news for the poor is how accessible they are to the poor. As is the trend with many medicines, the costs of contraceptive pill formulations have decreased significantly since the launch of the first contraceptive pill in 1960. This has been partly due to the increased number of products available, due to the development of second and third generation pills with improved side-effect profiles, ensuring cost reduction due to competition. Consequently, at the current time, the contraceptive pill is more affordable for developing countries than it was when it was first introduced. Use of hormonal contraception worldwide, however, is still not universal. United Nations (UN) statistics show that, in 2011, throughout the world, an average of 63% of women who were married or partnered were using contraception.<sup>535</sup> However, this figure of 63% is an average, and ranges from 70% or more of women in Europe, North America, Latin America and the Caribbean, to only 31% of women in Africa. The highest

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<sup>533</sup> Szarewski and Guillebaud, "Contraception: Current State of the Art", pp. 1224-1226.

<sup>534</sup> Ushma Upadhyay and Bryant Robey, "Why Family Planning Matters", *Population Reports. Series J, Family Planning Programs*, 49 (1999), pp. 1-31.

<sup>535</sup> United Nations, "Department of Economic and Social Affairs, Population Division (2013) World Contraceptive Patterns 2013", 2013, at <https://www.un.org/en/development/desa/population/publications/pdf/family/worldContraceptivePatternsWallChart2013.pdf>. (accessed March 2020).

figure was 88% in Norway, and the lowest was 4% in South Sudan. On a worldwide basis, the most popular forms of contraception were female sterilisation (19%), intrauterine device (IUD)(14%), the contraceptive pill (9%) and condoms (8%). However, use of less reliable traditional methods of contraception (rhythm method, douching and folk medicine) is still prevalent in some parts of the world, especially mid-Africa and western Asia. These UN statistics identified one in five women as having an unmet contraceptive need, with no access to contraception, especially in sub-Saharan Africa and the Pacific islands. Consequently, many commentators argue that there are unmet needs for oral contraception in the developing world, and that more distribution of the pill is needed.<sup>536</sup> In conclusion, on balance, the contraceptive pill is good news for the poor, dependent on whether the pill can, in fact, be made available to all world citizens in an equal and fair way.

Second, does the project conform to the image of God or does it attempt to be “like God”? Here, the answer is nuanced. At an individual level, use of the contraceptive pill enables individuals to control their fertility and plan their families and, at a societal level, the pill and contraceptive services enable governments to exercise control over population growth. The contraceptive pill could therefore be regarded as an attempt to be “like God” in that people are using the pill to control and manipulate human life, and to have a power and knowledge which might be regarded as God-like, and in contravention of natural law, in terms of a creation divinely ordered under a sovereign creator. Concern over this level of control would be consistent with the Roman Catholic’s church’s natural law objections to the contraceptive pill.

Conversely, to what extent does the pill conform to the image of God? For the purposes of answering this question, I would interpret conformation to the image of God as the extent to which the use of the pill, and its effects on individuals or society, reflects a comprehensive understanding of the *imago Dei*, taking into account the different theological approaches to the *imago Dei* that

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<sup>536</sup> For example, Bahamondes et al, "Non-contraceptive benefits of hormonal and intrauterine reversible contraceptive methods", pp. 640-651.

have been described. In Chapter 2, I argued that transhumanist biomedical technologies reflected a limited understanding of the *imago Dei*. The *imago Dei* reflected by the use of transhumanist technologies in humanity is one that is excessively substantive, focussing on human attributes, at the expense of being relational or functional, and in a way that is individualistic and inward-looking, in eschatological terms. With that worldview, there is a danger that, instead of human beings worshipping God, because they are made in his image, they would instead worship the technologically enhanced posthuman person as a god instead. There is a danger that human beings will look to technology for perfection rather than seek spiritual perfection and transformation in union with Christ, which the Christological dynamic of the *imago Dei* would point towards.

As described earlier, the contraceptive pill, as an enhancement, confers a specific attribute to humanity – the ability to postpone or delay pregnancy in a controllable manner. The pill may also confer other attributes on the user – for example, a regular menstrual cycle or increased bone density. Like proposed transhumanist technologies, the pill therefore does affect certain human attributes, and this does reflect a substantive theological view of the *imago Dei*. However, as seen earlier, use of the pill also has an impact on human relationships - in particular, on the relationship of men and women in marriage - and this has implications for the *imago Dei*. The *imago Dei* doctrine in Christian history has been criticised for being androcentric, because of the interpretation of Bible passages such as 1 Corinthians 11v7. For example, Mary Catherine Hilkert has argued that “the *imago Dei* doctrine has been the cause of oppression and discrimination against women in the past and needs rethinking.”

<sup>537</sup> During the 20<sup>th</sup> century, feminist theologians have strived to redress the balance, and have developed understandings of the *imago Dei* that are inclusive of women - for example, those of Hilkert and also Mary McClintock

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<sup>537</sup>Mary Catherine Hilkert, “Cry Beloved Image: Rethinking the Image of God”, in *In the Embrace of God: Feminist Approaches to Theological Anthropology*, edited by Ann Graff (Maryknoll, NY: Orbis, 1995), pp. 190-205. See also discussion in J. Wentzel Van Huyssteen, *Alone in the World? Human Uniqueness in Science and Theology* (Grand Rapids: Eerdmans, 2006), pp. 139-143.

Fulkerson.<sup>538</sup> The contraceptive pill has enhanced the marriage relationship by changing its dynamic and redressing the balance of power and influence in favour of women in marriage. Consequently, use of the contraceptive pill reflects a more gender-neutral *imago Dei* in the context of human relationships. This helps to address feminist concerns about the role of women in humanity and moves beyond previous views of *imago Dei* that are androcentric and have been subject to gender-related critique. Furthermore, I would suggest that, because the relational *imago Dei* in humanity is upheld by effects of the contraceptive pill on relationships, this may also have a positive effect in emphasising the functional approach to the *imago Dei*. Because relationships in human society are recast in a positive way in human society, this may enable men and women to more properly exercise their specific vocations as men and women in God's world.

Third, what attitude does the project embody towards the material world (including our own bodies)? Although it has systemic effects, the contraceptive pill does not make wholesale material changes to the body in a negative way, or in a way that denigrates the body, in the way that some transhumanist technologies do - for example, mind uploading or cybernetics. The pill mimics the actions of naturally occurring sex hormones, and so it is a biomedical technology that exerts positive effects through its actions on the human body, and therefore upholds the significance of the body.

However, the contraceptive pill does provide a technological means of regulating and manipulating the body. This may be used for good ethical ends – for example to promote planned parenthood and provide family stability - but may also be used for ends that are not consistent with a Christian ethic – for example, the avoidance of parenthood for selfish reasons, or to enable sexual activity with multiple partners or adultery. As mentioned in the previous chapter, Cole-Turner has argued that pharmacological solutions should not be sought for

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<sup>538</sup> Mary McLintock Fulkerson, "Contesting the Gendered Subject: A Feminist Account of the *Imago Dei*", in *Horizons in Feminist Theology: Identity, Traditions and Norms*, edited by Rebecca Chopp and Sheila Devaney (Minneapolis: Fortress, 1997), pp. 95-115.

spiritual problems.<sup>539</sup> I would suggest that, in the same way, pharmacological manipulation of the body is no substitute for good ethical decision-making.

As previously mentioned in this chapter, the contraceptive pill has only a modest effect on mortality so, as a biomedical technology, it is not opposed to human finitude in the way that some proposed transhumanist medical technologies are, such as cryogenic preservation or mind uploading. However, as stated, the pill has benefits for individual quality of life – control over fertility, family planning, and other health benefits. Furthermore, the availability of contraception has enabled couples to participate more fully in activities outside of marriage and family life – careers, hobbies, sports and social life - with the potential social, cultural –and material – benefits that those activities might provide. Consequently, even though the contraceptive pill does not significantly prolong life and therefore affect human finitude, it does have the potential to enhance the material nature of human life, in the broadest sense. This may be ethically positive, if the material gains to society as the result of contraceptive use provide moral goods in society. However, in some circumstances, these material gains may detract from spiritual life, if they are employed in an individual, hedonistic or exploitative way.

Fourth, what attitude does the project embody towards past failures? The development of the contraceptive pill has been a great success in many ways; indeed, as described in an earlier section of this chapter, it has been hailed as the fulfilment of the search for the “ideal contraceptive” and as a triumph of control over human fertility, with far-reaching consequences for society, so it could be regarded as a hubristic technological development. The development of the contraceptive pill and its impact on human society has been described in fulsome terms by scholars and commentators. Because of its advantages over previous forms of contraception (namely, that it is a non-invasive method, which can be controlled by the woman), McLaren has described the pill as a

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<sup>539</sup> Ronald Cole-Turner “Towards a Theology for the Age of Biotechnology”, in *Beyond Cloning: Religion and the Remaking of Humanity*, edited by Ronald Cole-Turner (Harrisburg PA: Trinity Press International, 2001), p. 144.

“contraceptive revolution”.<sup>540</sup> Cook has argued that the pill “precipitated a transformation in sexual mores” and that, by reducing the social and economic impact of pregnancy, the pill has transformed attitudes to sexuality.<sup>541</sup> Similarly, May has described the pill as, not simply a method of contraception but “a flash point for major social transformation”.<sup>542</sup> Furthermore, at the time of its introduction, the contraceptive pill was regarded not only as a convenient form of contraception, but as a solution to a range of socio-political problems. It was hailed as the solution to the problem of exponential population growth, a “clean”, scientific solution to the problem of contraception and unwanted pregnancy. The pill was easy to prescribe, and it required no invasive or messy process, and therefore it sanitised contraception.<sup>543</sup> Many doctors also saw the pill as a clinical approach to contraception, which was consistent with their professional ethics and aspirations.

In short, there is evidence to suggest that the contraceptive pill has indeed been adopted confidently by western society, as a panacea for various social problems, in a way that Cole-Turner has warned against.<sup>544</sup> In reference to the definition and discussion of humility in Chapter 2, the contraceptive pill does appear to have been developed and distributed with confidence, even hubris, as a man-made innovation, rather than with humility as a product of the natural world, which reflects a glory which does not belong to humanity. However, this confidence in the pill has to some extent been misplaced, with various unintended consequences over the years, such as the “pill scares” (the risk of blood clotting-related side effects with the pill) and also the inability of the pill to protect against sexually transmitted diseases, which became apparent with the spread of HIV and more recently, the increased incidence of chlamydia.

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<sup>540</sup> McLaren, *A History of Contraception*, p. 2.

<sup>541</sup> Cook, *The Long Sexual Revolution*, p. 7.

<sup>542</sup> May, *America and the Pill*, p. 168.

<sup>543</sup> McLaren, *A History of Contraception*, pp. 240-245; Cook, *The Long Sexual Revolution*, p. 278.

<sup>544</sup> Cole-Turner, “Towards a Theology for the Age of Biotechnology”, p. 144.



Another approach to the theological evaluation of medical technologies is seen in Elaine Graham's analysis of transhumanism, where she outlined three problematic theological issues relating to medical technologies – concerning embodiment, autonomy and subjectivity.<sup>545</sup> Below these issues are described and related to the impact of oral contraception on society.

First, the problem with transhumanist technologies is that they interfere with the integrity of the individual body and can therefore have a disruptive effect on the corporate body – the community. As argued earlier in this section, the contraceptive pill does not have a negative material impact on the individual human body and, because of its positive effects on human relationships, it may have material benefits for the corporate body of humanity - human society in general. These benefits have been noted especially in developing countries, where the effects of contraception programmes in specific countries have been studied in detail.<sup>546</sup> However, the impact of the pill on the corporate body of society will be dependent on the ethical choices made by individuals, concerning contraception, relationships and family planning, and also on government policies on the availability of, and accessibility to, contraception. Thus, in relation to this criterion, the contraceptive pill does not resemble a transhumanist technology because there is evidence to indicate that the pill has positive effects on society – on humanity at a corporate level – as well as humanity at an individual level.

Second, Graham argues that transhumanist medical technologies enable individuals to exercise unbridled autonomy in a negative manner. However, as I have argued earlier in this chapter, the effects of the pill on autonomy and personal choice are ambiguous. While the availability of the pill ostensibly gives women (and men) choice about family planning, its widespread use may, in practice, restrict men's choices about contraception, and also be an instrument of coercion for women, because of the so-called coital imperative and also

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<sup>545</sup> Graham, *In Whose Image?* pp. 57-64.

<sup>546</sup> Upadhyay and Robey, "Why Family Planning Matters", pp. 1-31.

exploitative distribution of the pill in certain societies. In this respect, the effect of the contraceptive pill on autonomy bears a striking resemblance to the likely effects of future transhumanist technologies on autonomy, as outlined in the transhumanism enhancement literature – the technology may be adopted at the outset with autonomy, but autonomy may be restricted in some situations where the technology is used. Moreover, as mentioned previously in this section, autonomy is an ethically neutral phenomenon – it may be used to inflict selfish desires on other people, or it can be used to pursue good ethical ends. The contraceptive pill certainly does not confer unbridled autonomy on the individual.

Third, Graham is concerned that transhumanist technologies are suspect because they are focused on the subjective experience of the user. The subjectivism inherent in transhumanism may derive from the strong emphasis on autonomy (self-determination) in choosing enhancements, which has been a key feature of transhumanist thought.<sup>547</sup> However, as discussed in Chapter 2, the irony is that, although transhumanist technologies enhance subjective experience, they are ultimately problematic because they objectify the human body, and treat it as an artefact rather than a human person.<sup>548</sup>

Some feminist writers have argued that the contraceptive pill can objectify the user – i.e. render the woman using the pill an object of sexual desire.<sup>549</sup> This is analogous to the way some transhumanist technologies – for example, cybernetics or gene alterations – treat the body as a product to be engineered. However, because the pill exerts its effects within and through the human body, in a way that does not negate embodiment, I would argue that, with the pill, the user does not become an artefact to be manipulated at will, as with some proposed transhumanist technologies. On the contrary, the pill provides benefits

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<sup>547</sup> World Transhumanism Association, “Transhumanist Declaration”, pp. 54-55.

<sup>548</sup> Cole-Turner, “Towards a Theology for the Age of Biotechnology”, pp. 142-143, 147.

<sup>549</sup> Jutte, *Contraception: A History*, p. 111.

to the individual person which are experienced subjectively in sexual, marriage and family relationships.

The findings of this chapter indicate that the contraceptive pill conforms to the criteria for transhumanist developments in that it is a technology which is applied to the human person to exert its effects and is one that, largely, has a beneficial effect on human flourishing. Furthermore, the contraceptive pill has had a significant impact on human society, not just on the experience of the individual. The use of the contraceptive pill has both objective and subjective components, in that it has the potential to objectify the user, as an object of sexual desire, and yet enhances the user's subjective experience. Furthermore, given that it was planned, in part, as a means of controlling the population for socio-political reasons, rather than just as a means of preventing or delaying conception, I would argue that the contraceptive pill has been seen as the culmination of the search for effective contraception over the centuries, and so the pill has been regarded with extreme confidence, even hubris, as a triumph of human technological achievement, in a similar way to proposed future transhumanist technologies. This contrasts with a humility that derives from scientific engagement with the mysteries of nature which reflect a glory that ultimately is not human glory.

Unlike radical, "high-tech" transhumanist technologies - for example, mind uploading or cryogenics - the contraceptive pill has the potential to be beneficial to the poor, because of its low cost relative to high-tech medicine and its ability to help women on low incomes to plan their families and their working life. Unlike approaches to transhumanism that emphasise human attributes, and therefore a more substantive approach to the *imago Dei*, as outlined in Chapter 2, I have argued in this chapter that the effects of the contraceptive pill reflect an approach to the *imago Dei* that is more balanced and is relational and functional, as well as substantive. Unlike forms of transhumanist technologies which are essentially anti-materialist, such as mind-uploading, the contraceptive pill exerts positive effects in and through the human body and its mechanisms and does not negate biological life.

However, the contraceptive pill raises significant questions for personal autonomy. A stated aim of the transhumanist movement is that individuals who are seeking biomedical enhancement can adopt a biomedical technology autonomously, as a matter of free, personal choice. Correspondingly, a key theological criticism of transhumanist technologies, raised by Elaine Graham, is that they enable unbridled autonomy in a negative manner. The evidence from the development and use of the contraceptive pill suggests that neither of these extremes is true. While individual users of the contraceptive pill can exercise autonomy in choosing it at the outset, a number of factors – for example, the impact on men’s choices, the possibility of the “coital imperative” for women, equity in the marketing and distribution of the pill and indeed the ambiguous nature of sexual desire - can ultimately lead to negative effects of the contraceptive pill on personal autonomy.

In the next chapter, we will turn our focus to SSRI antidepressants, and consider whether these might be regarded as a transhumanist medical technology, according to the general and specific criteria previously defined.

## **Chapter 4 – Case Study – Selective Serotonin Reuptake Inhibitor (SSRI)**

### **Antidepressants**

#### **4.1. Introduction**

The previous chapter described the development of the oral contraceptive pill, the effects of the pill on human society, and the Roman Catholic church's theological and ethical objections to the pill. In the latter part of the chapter, the contraceptive pill was evaluated against the criteria for evaluation of transhumanist technologies developed in Chapter 2, consisting of general criteria to describe transhumanist technologies, based on the writings of transhumanists, and specific theological criteria for ethical assessment of transhumanist technologies, drawing on the work of Neil Messer and Elaine Graham.

This case study showed that the contraceptive pill resembled a transhumanist biomedical technology in general criteria, that as a pharmacologically active pharmaceutical product, it is a technology, it is applied to the human body to exert its effects and has a positive effect on human flourishing. However, as with proposed future transhumanist biomedical enhancements, the effects of the pill on personal autonomy are ambiguous – it can have negative as well as positive effects on personal autonomy. Furthermore, the pill seems in danger of objectifying the human body (in making the body an object for sexual desire), yet at the same time the pill leads to a heightened subjectivity on the part of the user, where subjective, individual experiences of sex and relationships become more significant as societal norms. Unlike some of the future transhumanist technologies described in Chapter 2, the contraceptive pill as a medical technology upholds human embodiment and is consistent with human bodily life and flourishing, rather than contrary to it. In general terms, the contraceptive pill may be good news for the poor, in terms of its potential effects on poverty and working patterns among women. However, there are potential ethical concerns with the pill surrounding its equitable distribution and use in different countries and cultures.

This chapter will present the second case study of previous therapeutic developments, which took place during the “therapeutic revolution” years (1950-1990) – the development of the selective serotonin reuptake inhibitor (SSRI) antidepressants which were marketed in the late 1980s - for example, fluoxetine, marketed by Lilly as Prozac. In the same way as in the last chapter, the first section will describe the history of SSRI development, and how SSRIs arose from previous developments in rational psychopharmacology. The second section will discuss the impact of SSRIs on society, both their therapeutic effects on patients with clinical depression and their use as mood-altering drugs in individuals who are not depressed. The chapter will go on to discuss a Christian ethical response to the use of SSRIs, engaging with the work of Catholic scholar John-Mark Miravalle.<sup>550</sup> In this discussion, the nature of depression and the way it is treated will be explored, with reference to Aquinas’ classification of human attributes, and their implications for psychology, and I will present a critique of Miravalle’s argument. The third section of the chapter will then assess SSRI antidepressants against the criteria for evaluation of transhumanist technologies developed in Chapter 2, to determine the extent to which, in their time, they could have been regarded as a transhumanist development, and to evaluate them from a Christian ethical perspective.

#### 4.2. The Development of SSRIs

The development of Prozac (fluoxetine) and other selective serotonin reuptake inhibitor (SSRI) antidepressants in the late 1980s was arguably the climax of the post-war rational psychopharmacology endeavour. So, for example, Lopez-Munoz and Alamo note that there have been no therapeutic advances for depression since the 1990s,<sup>551</sup> and Perez Caballero et al contend that use of

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<sup>550</sup> John-Mark Miravalle, *The Drug, The Soul and God: A Catholic Moral Perspective on Antidepressants* (Chicago: University of Scranton Press, 2010).

<sup>551</sup> Francisco López-Muñoz and Cecilio Alamo, “Monoaminergic Neurotransmission: The History of the Discovery of Antidepressants from 1950s Until Today”, *Current Pharmaceutical Design*, 15 (2009), pp. 1563-1586.

SSRIs has, in fact, suppressed the exploration of new models of depression, and the investigation of new drugs.<sup>552</sup>

Edward Shorter has described the remarkable history of psychopharmacology.<sup>553</sup> Prior to the twentieth century, there were no known specific treatments for any mental illnesses. In the western world, if people had mental illnesses that rendered them unable to function in society, as it was at the time, or caused them to be a hazard to other people or themselves, they were housed in institutions which simply managed their behaviour and segregated them from mainstream society. This was done in a way that was sometimes cruel and unjust, and that reinforced the stigma of mental illness. Psychiatrist David Healy describes the mental hospitals of the past as “no more than jails with brutal guards.”<sup>554</sup> The early twentieth century saw the introduction of two groups of drugs which had some benefits in mental illnesses: a) amphetamines and other stimulants, which were of some value in patients with profound depression, and b) barbiturates, which were tranquillisers, and therefore were helpful in patients with mania or agitation.<sup>555</sup> However, both groups of drugs had significant side-effects and were open to abuse; barbiturates also were highly toxic, and often led to accidental death.

However, some serendipitous discoveries after the Second World War laid the foundation for the development of specific, targeted drug therapies for mental illnesses. First, in 1949, an Australian psychiatrist, John Cade, conducted experiments to determine whether a specific toxin was excreted in the urine of patients with mania but found – coincidentally - that lithium salts had a calming effect in patients who had mania or bipolar disease. This eventually led to

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<sup>552</sup> Laura Perez-Caballero, Sonia Torres-Sanchez, Lidia Bravo, Juan Antonio Mico and Esther Berrocoso, “Fluoxetine: a case history of its discovery and preclinical development”, *Expert Opinion in Drug Discovery*, 9 (2014), pp. 1-12.

<sup>553</sup> Edward Shorter, *Before Prozac: The Troubled History of Mood Disorders in Psychiatry* (Oxford: Oxford University Press, 2009), pp. 11-33.

<sup>554</sup> David Healy, "Psychopharmacology and the government of the self", Colloquium at the Centre for Addiction and Mental Health, *Nature Medicine*, 2000.

<sup>555</sup> Shorter, *Before Prozac*, pp. 18-33.

lithium salts becoming a standard treatment for bipolar disease.<sup>556</sup> Second, in 1955, May and Baker Ltd marketed chlorpromazine, the first effective medicine for schizophrenia, which was an unexpected by-product of the M and B antihistamine research programme.<sup>557</sup> Third, in 1957, Roche developed the first monoamine oxidase inhibitor (MAOI) antidepressant. Roche had acquired a large amount of hydrazine-containing rocket fuel from the German military in the aftermath of World War Two and were investigating several hydrazine-based drugs for their anti-tubercular properties. However, they fortuitously discovered that one of them, iproniazid, had a positive effect on patients' moods, and therefore had potential as an antidepressant.<sup>558</sup>

This set the scene for research in the late 1950s and early 1960s, when scientists began to realise that the monoamine neurotransmitter substances in the brain, noradrenaline and serotonin, had a profound effect on mood and mental illness, due to their actions on the relevant receptors.<sup>559</sup> At this time, the so-called "monoamine hypothesis" of depression was formulated,<sup>560</sup> which stated that the underlying cause of clinical depression is a depletion in the levels of serotonin and noradrenaline in the central nervous system.<sup>561</sup> This led to the development of drugs which prevented the reuptake of noradrenaline and serotonin in the brain - the tricyclic antidepressants, amitriptyline and imipramine. During the 1960s and 1970s, various tricyclic antidepressants were launched, such as trimipramine, clomipramine, nortriptyline and others. These tricyclic antidepressants were a significant breakthrough in the treatment of depression, because they enabled people who had debilitating depressive illness to live relatively normal lives, when previously they would have been unable to function normally in society. However, these tricyclic agents had

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<sup>556</sup> Shorter, *Before Prozac*, p. 65.

<sup>557</sup> Shorter, *Before Prozac*, p. 46.

<sup>558</sup> López-Muñoz and Alamo, "Monoaminergic Neurotransmission", pp. 1563-1586; Shorter, *Before Prozac*, p. 53.

<sup>559</sup> See discussion on receptor theory in Chapter 1.

<sup>560</sup> López-Muñoz and Alamo, "Monoaminergic Neurotransmission", pp. 1563-1586; Shorter, *Before Prozac*, p. 68.

<sup>561</sup> David Healy, *Let Them Eat Prozac: The Unhealthy Relationship Between the Pharmaceutical Industry and Depression*, (New York/London: New York University Press, 2004), p. 9.



pharmacological effects in all parts of the body, not just in the brain. They therefore had many physiological side-effects – for example, increased heart rate, palpitations, sedation, blurred vision and dry mouth - side effects which could be marked at high doses. Such side effects therefore limited the dose that could be given and made it difficult to treat patients with severe depression with high doses. The side-effects also meant that tricyclic antidepressants were toxic in overdose and, given the propensity for depressed patients to consider suicide and use their drugs as the means, this was a serious problem.

Many scientists in the United States believed that the reuptake of noradrenaline, rather than that of serotonin, was the key factor in pharmacological treatment of depression.<sup>562</sup> However, following new work by Carlsson and colleagues in 1969 on the effects of antihistamine structure on serotonin depletion in the brain,<sup>563</sup> the focus of research moved to serotonin-reuptake inhibiting antidepressant candidates.<sup>564</sup> The thinking was that these agents might be as effective as antidepressants, but with a more favourable side-effect profile than the tricyclic antidepressants.

Another important feature of the treatment of depression from the 1960s onwards was the increasing classification of personality characteristics as subtypes of depressive illness. The mental illness classification, the Diagnostic and Statistical Manual of Mental Disorders (DSM), was first introduced in 1952, as a means of classifying various specific psychiatric disorders, a task made particularly urgent by the numbers of veterans returning from World War Two, who were exhibiting a variety of symptoms of mental illness. However, as more detailed knowledge of psychopharmacology became available, the DSM classification became more granular, with an increasing number of different disease categories. Schermer notes that no less than four hundred new disease

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<sup>562</sup> Healy, *Let Them Eat Prozac*, pp. 9-10.

<sup>563</sup> Arvid Carlsson, Hans Corrodi, Kjell Fuxe and Tomas Hökfelt, "Effects of some antidepressant drugs on the depletion of intraneuronal brain catecholamine stores caused by 4,  $\alpha$ -dimethyl-meta-tyramine", *European Journal of Pharmacology*, 5 (1969), pp. 367-373.

<sup>564</sup> Edward F. Domino, "History of Modern Psychopharmacology: A Personal View with an Emphasis on Antidepressants", *Psychosomatic Medicine*, 61 (1999), pp. 591–598.

categories have been added to the DSM since its introduction in 1952.<sup>565</sup> The DSM therefore became more catch-all in its categories and what had previously been regarded as character or personality attributes were increasingly listed by the DSM as subtypes of depressive illness. So, for example, Harvard psychiatrist Joseph Glenmullen notes that “perfectionism” has come to be included under the penumbra of depression in the DSM classification.<sup>566</sup> This implied that all behaviour had a biological or biochemical cause and could therefore be “treated” with antidepressants – the so-called “biological model” of depression.<sup>567</sup>

The biological model of depression has been subject to considerable criticism because it is in apparent conflict with a person-centred approach to mental healthcare. Glenmullen claims that the biological approaches to psychiatry have led to an inversion of the diagnostic process.<sup>568</sup> Rather than medicines being developed to treat diseases and to meet the needs of the person, instead diseases were being modelled on the drugs produced by the pharmaceutical industry that could be used to treat them. This argument is valid, in my view, given the high-throughput screening approach adopted by the pharmaceutical industry in the search for new therapeutic candidates in psychopharmacology. Furthermore, Glenmullen argues that the biological approach to psychiatry leads to mechanistic, rather than holistic, treatment, and is therefore reductionist in nature.<sup>569</sup> He states that the biological model of depression has been cited as “proof” that depression is genetically inherited, but he argues – persuasively – that claims about genetic causation of depression cannot be proven, due to non-equivalence of animal models and the use of surrogate end points in studies. He therefore dismisses theories of genetic predisposition of

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<sup>565</sup> Maartje Schermer, Ineke Bolt, Reinoud de Jongh and Berend Olivier, “The Future of Psychopharmacological Enhancements: Expectations and Policies”, *Neuroethics*, 2 (2009), pp. 75–87.

<sup>566</sup> Joseph Glenmullen, *Prozac Backlash: Overcoming the Dangers of Prozac, Zoloft, Paxil, and other antidepressants with safe, effective alternatives* (New York: Simon and Schuster, 2001), p. 194.

<sup>567</sup> Joseph Glenmullen, *Prozac Backlash*, p. 194.

<sup>568</sup> Glenmullen, *Prozac Backlash*, pp. 193-194.

<sup>569</sup> Glenmullen, *Prozac Backlash*, p. 192.

depression, based on the biological model of depression, as ideologically driven “Darwinian propaganda”, albeit in a somewhat polemic manner.

British psychiatrist David Healy is another trenchant critic of the biological model of depression; he claims that the disease modelling in this way encourages biological treatment of “diseases” that are essentially social problems, rather than pathological illnesses.<sup>570</sup> Healy argues that, from an ethical perspective, this modelling paradigm represents a slippery slope to social engineering and ultimately eugenics. While this is a sweeping claim, it is not without foundation. In a similar way, Ronald Cole-Turner has identified the reductionist tendency of the biological model of depression, arguing that, with psychopharmacology, humans are reaching out for molecular solutions for what are essentially spiritual problems.<sup>571</sup> This reductionism undermines some hitherto important approaches to medical ethics, as described in Chapter 1, for example, ethical approaches that focus on the motivations of the medical or healthcare practitioner, or on assessing the consequences of a particular treatment for the patient.

These criticisms of the biological model are valid but, in my view, the polarisation between the biological model of depression and person-centred mental healthcare is a false dichotomy. A nuanced approach, accounting for both biological and person-centred factors, is more helpful. This recognises that, on the one hand, mental disorders may be grounded in real biological – neurochemical – characteristics but, on the other, they cannot simply be reduced to neurochemistry, and that both aspects must be understood in order to provide high-quality and truly person-centred care. This debate, with its implications concerning biological reductionism and human emergence, is an important one for an ethical understanding of antidepressants as a biomedical technology, and I will return to this later in this chapter.

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<sup>570</sup> Healy, *Let Them Eat Prozac*, p. 255.

<sup>571</sup> Ronald Cole-Turner, “Towards a Theology for the Age of Biotechnology”, in *Beyond Cloning: Religion and the Remaking of Humanity*, edited by Ronald Cole-Turner (Harrisburg, PA: Trinity Press International, 2001), p. 144.

It was in an environment of rapidly developing psychopharmacological knowledge, together with an increasing willingness to embrace a biological model of psychiatry, that the SSRI antidepressants were developed, as “rational” antidepressants. Based on the previous work on serotonergic actions of antihistamines, Bryan Molloy, a research chemist at Lilly Research at Indianapolis, US, developed a range of phenoxy-phenyl-propanolamine molecules, which were structural analogues of antihistamines. Among these was the compound, LY-110 140, which was named fluoxetine in 1975, and which would eventually be marketed as Prozac.<sup>572</sup> However, although fluoxetine was discovered and its pharmacology investigated in the mid-1970s, it did not emerge on the market as a new antidepressant until 1988. This was for several well-documented reasons.<sup>573</sup>

First, as was typical with the rational drug discovery process at the time (see Chapter 1), fluoxetine was just one of many compounds being screened by Lilly for antidepressant properties. Although fluoxetine came to the attention of Lilly Clinical Research, headed by David Wong, during the 1970s, the molecule appeared to have only mild effects on mood but, unusually for an antidepressant, it had marked alerting and stimulant properties.<sup>574</sup> Consequently, it was not immediately recognised as an obvious candidate for marketing as an antidepressant. For this reason, it was not until 1980 that Lilly Pharmaceuticals finally committed themselves commercially to fluoxetine as a pipeline drug.<sup>575</sup>

Second, due to various factors, such as the social and financial costs of the Vietnam War, escalating healthcare costs and a distrust of scientists that had arisen during the Nixon era, there was little federal government funding for psychopharmacology research in the US by the end of the 1970s.<sup>576</sup> Yet, at this

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<sup>572</sup> Healy, *Let Them Eat Prozac*, pp. 22-24; Todd Hillhouse and Joseph Porter, “A brief history of the development of antidepressant drugs: From monoamines to glutamate”, *Experimental Clinical Psychopharmacology*, 23 (2015), pp. 1–21.

<sup>573</sup> Shorter, *Before Prozac*, p. 170; Healy, *Let Them Eat Prozac*, p. 32.

<sup>574</sup> Healy, *Let Them Eat Prozac*, p. 32.

<sup>575</sup> López-Muñoz and Alamo, “Monoaminergic Neurotransmission” pp. 1563-1586.

<sup>576</sup> Healy, *Let Them Eat Prozac*, p. 33.

time, psychiatry was becoming complex diagnostically, due to the granular disease classifications described earlier, and the success of earlier drug innovations meant that patients and relatives had higher expectations of mental health and psychiatric treatments than ever before.

Third, a crucial factor was that the clinical trial methodology at the time of its discovery did not adequately demonstrate fluoxetine's antidepressant activity.<sup>577</sup> Following its initial development, fluoxetine was tested against placebo (an inactive tablet) for antidepressant activity, as was standard practice at the time, but the trials showed that fluoxetine was no more effective than placebo in six out of eight clinical studies.<sup>578</sup> On this basis, the US Food and Drug Administration (FDA), the US drug licensing agency, advised Lilly that fluoxetine was not worth pursuing as a new antidepressant. However, it was not appreciated then that there was a high placebo response rate in all antidepressant clinical trials – in other words, a patient with depression will respond to an inactive placebo, as a purely psychological effect. Once this fact was established, new antidepressants were trialled against other antidepressants instead of just a placebo, and the clinical trial requirement that the active agent should be superior to the comparator was relaxed.<sup>579</sup> Trials of fluoxetine under this new methodology gave a very different picture of the drug. When compared with the established tricyclic antidepressant, imipramine, fluoxetine was shown to be at least as effective as imipramine as an antidepressant, but with considerably fewer side-effects, because of its serotonin-specific action.

Therefore, Lilly Pharmaceuticals finally had the positive clinical evidence - and marketing messages - about fluoxetine, and it was marketed as Prozac in the United States in 1988, and then in the United Kingdom in 1989. At about that time, several similar SSRI antidepressants were launched – fluvoxamine (branded Faverin) by Solvay, sertraline (branded Zoloft (US) and Lustral (UK)) by Pfizer and paroxetine (branded Paxil (US) and Seroxat (UK)) by

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<sup>577</sup> Shorter, *Before Prozac*, p. 188.

<sup>578</sup> Shorter, *Before Prozac*, p. 189.

<sup>579</sup> Healy, *Let Them Eat Prozac*, p. 34.

GlaxoSmithKline (GSK). All the medicines in this class have had a profound impact on the treatment of clinical depression. However, Prozac has been the biggest selling drug of the class and has become most well-known – with an impact on popular culture, as well as on medicine. This impact will be explored in the next section.

#### 4.3. The Social & Cultural Impact of SSRIs

Peter Kramer, the psychiatrist and author of the iconic book, *Listening to Prozac*, claims that, once on the market, Prozac was popular “like no previous antidepressant”.<sup>580</sup> Sales of Prozac were estimated as \$125 million in 1988, during the drug’s first year on the market, and then \$350 million in 1989.<sup>581</sup> Two years after its launch, there had been 650,000 prescriptions for Prozac.<sup>582</sup> Furthermore, Stapert estimates that, by 1993, 8 million people were taking Prozac and, by 1994, 10 million people, mainly in the US, were taking it.<sup>583</sup>

There were several factors behind the massive success of Prozac. First, as stated previously, Prozac fulfilled an unmet clinical need for an effective antidepressant, but without the side-effects and toxicity of older drugs. Because of these properties, Prozac was safer if taken in overdose, compared to older agents, and this was important, given that mortality due to suicide in patients treated with antidepressants was not only a tragic loss of human life and potential, but a major public health issue for society. Prozac’s low toxicity in overdose was exploited heavily in Lilly’s promotional campaign for the drug.<sup>584</sup>

Second, Lilly’s marketing of Prozac in the UK was aligned to the national “Defeat Depression” campaign, which highlighted the financial and social disease burden of depression, encouraged health professionals to be on the

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<sup>580</sup> Peter Kramer, *Listening to Prozac*, (New York/London: Penguin, 1993), pp. 1-21.

<sup>581</sup> Shorter, *Before Prozac*, p. 198.

<sup>582</sup> Kramer, *Listening to Prozac*, pp.1-21, pp. 246-300; John Stapert, “Curing an Illness or Transforming the Self? The Power of Prozac”, *Christian Century*, 111 (1994), pp. 684-687.

<sup>583</sup> Stapert, “Curing an Illness or Transforming the Self?”, pp. 684-687.

<sup>584</sup> John Donoghue, “Prozac: Is it worthy of the hype?”, *Pharmaceutical Journal*, 280 (2008), pp. 57-58.

alert for signs of untreated depression, and shamed sceptical clinicians into actively treating the disease.<sup>585</sup> The net result was that Lilly appeared to be promoting a disease, rather than a treatment, and this was criticised by opponents of the biological model of depression, referred to earlier, who accused Lilly of “disease mongering”.<sup>586</sup> Nevertheless, this led to a greater awareness of depression, and a greater willingness to prescribe an “ideal” antidepressant.

Third, psychopharmacology commentator John Donoghue argues that Prozac was launched at just the right time.<sup>587</sup> In both the US and the UK, the late 1980s were a time of economic buoyancy, he argues. Society was undergoing rapid change, there was an optimistic mood and attitudes to mental health and emotional wellbeing were changing. Donoghue claims that, in the late 1980s, people were more willing than ever before to openly express emotional pain and distress. Furthermore, Mauro cited the constitutional right to happiness in the US Declaration of Independence, and claimed that, in the US in particular, many people began to feel that this right to happiness could be definitively realised through the use of Prozac and SSRIs.<sup>588</sup> Nevertheless, Carl Elliot has wisely challenged this notion of universal happiness, arguing that “happiness” is not thwarted by clinical depression, but by what he describes as existential “alienation” from the world, due to its suffering and difficulties, and that antidepressants and psychiatry cannot in themselves provide a resolution for this alienation.<sup>589</sup>

Fourth, in his critique of SSRIs, Glenmullen has argued that Prozac, as the “optimum” antidepressant, was able to thrive in the insurance-based US healthcare system in the early 1990s.<sup>590</sup> Antidepressant drugs were a relatively

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<sup>585</sup> Donoghue, “Prozac: Is it worthy of the hype?”, pp. 57-58.

<sup>586</sup> Schermer, “The Future of Psychopharmacological Enhancements”, pp. 75–87.

<sup>587</sup> Donoghue, “Prozac: Is it worthy of the hype?”, pp. 57-58.

<sup>588</sup> James Mauro, “And Prozac for all...”, *Psychology Today*, 27 (1994), pp. 44-50.

<sup>589</sup> Carl Elliott, “Pursued by Happiness and Beaten Senseless: Prozac and the American Dream”, *Hastings Center Report*, 30 (2000), pp. 7-12.

<sup>590</sup> Glenmullen, *Prozac Backlash*, p. 217.

cheap means of treating depression in comparison with counselling/therapy, where practitioner time was costly. Furthermore, the overall improved cost-effectiveness profile was especially true with the SSRIs, with their improved safety profile compared with older tricyclic agents. Health Maintenance Organisations (HMOs), the commissioners of healthcare services in the US, could therefore establish depression treatment protocols for provider physicians to follow, and the pharmaceutical industry could negotiate significant bulk purchase deals with the HMOs for the use of their branded antidepressants. Consequently, the use of Prozac and other SSRIs therefore became particularly widespread in the US health system during the 1990s.

Healy claims that another important factor in physician choice to prescribe Prozac and other SSRIs was the fact that these drugs arrived on the market shortly after the widespread use of benzodiazepines (such as Valium) had been discredited.<sup>591</sup> Benzodiazepines had been widely prescribed for anxiety in the 1970s, but had been found to lead to dependency and withdrawal effects, and there had been lawsuits against the benzodiazepine manufacturers for failing to warn of these adverse effects.<sup>592</sup> Healy argues that this meant that, if a doctor in the early 1990s was faced with an anxious patient, they would be wary of treating for anxiety with a benzodiazepine, and would be more likely to treat the patient for depression with an SSRI instead, and this contributed to the widespread prescribing of SSRIs.<sup>593</sup> However, I would suggest that this argument may not reflect the reality of clinical practice at the time, where there might equally have been caution in prescribing any new class of drug, in the wake of the benzodiazepine controversy. In any case, a withdrawal effect with SSRI antidepressants is also observed,<sup>594</sup> which has relevance for discussions

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<sup>591</sup> Healy, *Let Them Eat Prozac*, p. 34.

<sup>592</sup> Michael King, "Is there still a role for benzodiazepines in General Practice?", *British Journal of General Practice*, 42 (1992), pp. 202-205.

<sup>593</sup> Healy, *Let Them Eat Prozac*, p. 34.

<sup>594</sup> John Price, Patrick Waller, Susan Wood and Angus MacKay, "A comparison of the post-marketing safety of four selective serotonin re-uptake inhibitors including the investigation of symptoms occurring on withdrawal", *British Journal of Clinical Pharmacology*, 42 (1996), pp. 757-63.



about autonomy in the use of SSRI antidepressants, and which I will return to later in this chapter.

Possibly because of its relative safety, combined with the increasing number of subtypes of depression in expanding disease classifications, within a few years of its launch, fluoxetine began to be prescribed to people who were not clinically depressed, and who were functionally well - but who wanted to be “better than well”.<sup>595</sup> This practice – together with its implications for society and for medical ethics – was explored by psychiatrist, Peter Kramer, in his seminal book *Listening to Prozac*, published in 1994.<sup>596</sup> Kramer describes a patient named Tess, a woman who had many problems - an abusive parent, an unhappy marriage and a stressful working life – and who had what he described as “soft signs” of depression, but who otherwise presented well, and may have been concealing her illness.<sup>597</sup> Kramer wanted to give his patient the best possible treatment, so he cautiously prescribed Prozac, which was then a relatively new agent. Within two weeks, Tess had changed profoundly; not only was she no longer depressed, she had increased energy and enhanced personal confidence.

Kramer went on to describe how fluoxetine could improve energy and confidence in other patients, and he described fluoxetine as “cosmetic psychopharmacology”, the equivalent of cosmetic surgery on the personality.<sup>598</sup> Kramer suggests that fluoxetine and SSRIs could therefore be used to “treat” personality traits that had not previously been considered illnesses – for example, shyness, timidity, fastidiousness, low self-esteem and many others.<sup>599</sup> While Kramer was not necessarily advocating the use of fluoxetine in all of these cases, he was saying that, because of their broad-ranging actions, SSRI

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<sup>595</sup> Healy, *Let Them Eat Prozac*, p. 263.

<sup>596</sup> Kramer, *Listening to Prozac*, pp. 1-21.

<sup>597</sup> Kramer, *Listening to Prozac*, pp. 1-9.

<sup>598</sup> Kramer, *Listening to Prozac*, p. 273.

<sup>599</sup> Kramer, *Listening to Prozac*, pp. 18-20.

antidepressants - and the prospect of psychotherapeutic enhancement – could not simply be ignored by society.<sup>600</sup>

“Once we are aware of the unconscious, once we have witnessed the effects of Prozac” Kramer writes, “it is impossible to imagine the modern world without them.”<sup>601</sup> *Listening to Prozac* became an international bestseller and was a key factor in Prozac having a wider significance in society, far beyond the treatment of depression. Glenmullen makes the interesting observation that, whereas in the 1960s, recreational use of psychoactive agents was advocated by the counterculture of the time, Kramer’s opinions concerning non-therapeutic use of drugs in the 1990s were those of the medical establishment.<sup>602</sup>

The social implications of Kramer’s work have been discussed at length. John Donoghue described how fluoxetine did not just treat depression, but “offered opportunities for pharmacological personality reconstruction”, thus medicating unhappiness.<sup>603</sup> In his review of the social and cultural impact of Prozac, Elliott has claimed that Prozac has become an American cultural icon, “talked about on chat shows, on the celebrity circuit and in magazines”.<sup>604</sup> Mauro describes the cultural phenomenon of Prozac as a lifestyle drug in America.<sup>605</sup> As mentioned previously, he discusses the constitutional right to happiness, and argues that the authors of the US Declaration of Independence probably did not envisage laboratory-manufactured drugs as the ultimate means of happiness. Moreover, Mauro argues that fluoxetine has been popular in the US, despite its stimulant properties, because, he claims, “Americans have always liked stimulants”,

However, Healy – unsurprisingly, given his opposition to the biological model of depression - has cautioned against the “Prozac phenomenon” and the cosmetic psychopharmacology movement, saying that the popular notion that fluoxetine

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<sup>600</sup> Kramer, *Listening to Prozac*, p. 20.

<sup>601</sup> Kramer, *Listening to Prozac*, p. 300.

<sup>602</sup> Glenmullen, *Prozac Backlash*, p. 13.

<sup>603</sup> Donoghue, “Prozac: Is it worthy of the hype?”, pp. 57-58.

<sup>604</sup> Carl Elliott, “The Elvis of pharmaceuticals”, *British Medical Journal*, 313 (1996), p. 950.

<sup>605</sup> Mauro, “And Prozac for all...”, pp. 44-50.

is a lifestyle drug that will make a person feel “better than well”, is an urban myth, with its roots in the mistaken assumption that low serotonin levels always lead to depression.<sup>606</sup> Healy argues - correctly, in my view, if somewhat pedantically - that fluoxetine does not make every person who takes it consistently “better than well”, and that neuroimaging and pharmacogenetics tests are needed to fully understand a person’s baseline personality disposition, and to tailor psychopharmacological treatment accordingly. Similarly, Stapert argues that the “better than well” effects of fluoxetine that Kramer describes are serendipitous.<sup>607</sup> However, the use of fluoxetine as a mood enhancer has become part of the wider phenomenon of neuroenhancement – the use of drugs to enhance mental performance - which is widespread in American society.<sup>608</sup> Other examples of this might include students using modafinil to reduce fatigue, or methylphenidate to improve alertness.

Commenting on the popular perception of fluoxetine as a panacea for all known mental flaws, Mauro suggests that “perhaps the bad news for Prozac is that there is no bad news.”<sup>609</sup> On the contrary, however, in the years following its launch, several drawbacks were noted with Prozac. First, not every patient treated with fluoxetine responds immediately to treatment; clinical trials indicate that only about 30% of patients have an immediate initial response to SSRI antidepressant treatment.<sup>610</sup> This may be because the patient will not respond at all to the drug being used, but it may also be because the starting dose is too low; Halfin recommends that an SSRI should be started at the highest tolerated dose, in order to ensure the greatest probability of successful treatment.<sup>611</sup> Second, because of its alerting properties, fluoxetine has the potential to cause

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<sup>606</sup> Healy, *Let Them Eat Prozac*, p. 263.

<sup>607</sup> Stapert, “Curing an Illness or Transforming the Self?”, pp. 684-687.

<sup>608</sup> Kirsten Brukamp and Dominik Gross, “Neuroenhancement – A Controversial Topic in Contemporary Medical Ethics”, *Contemporary Issues in Bioethics*, (2012), pp. 39-51

<sup>609</sup> Mauro, “And Prozac for all...”, pp. 44-50.

<sup>610</sup> Aron Halfin, “Depression: The Benefits of Early and Appropriate Treatment”, *American Journal of Managed Care*, 13 (2007), pp. S92-S97.

<sup>611</sup> Halfin, “Depression: The Benefits of Early and Appropriate Treatment”, pp. S92-S97.

anxiety and wakefulness, which can be distressing for patients.<sup>612</sup> Third, and most seriously, from 1990 onwards, reports began to emerge of SSRI antidepressants being associated with suicidal ideation in certain types of people, which was perceived as a worsening of depressive illness in these people.<sup>613</sup>

#### 4.4. Theological & Ethical Engagement with SSRIs

While the theological and ethical response of the Roman Catholic church to oral contraception is well-documented, and has been discussed in the previous chapter, there has been less theological engagement with SSRI antidepressants. Furthermore, theological and ethical discussion about the use of SSRI antidepressants was not a response to the actual launch and initial use of Prozac and other SSRI antidepressants in the late 1980s. Instead it was a response to cosmetic psychopharmacology, and the “Prozac phenomenon”, which came later in the mid-1990s, popularised by Kramer and colleagues, and the subsequent use of SSRIs by people in Western society who wanted to feel “better than well”.

The most significant contribution to a theological and ethical understanding of SSRI antidepressants is from the American Roman Catholic scholar, John-Mark Miravalle, in his 2010 book, *The Drug, The Soul and God: A Catholic Moral Perspective on Antidepressants*.<sup>614</sup> In this section, I will evaluate this publication at some length.

Miravalle examines the contemporary use of antidepressants in the light of Thomas Aquinas’s categories of human attributes. He presents an integrity ethic to support the use of antidepressants as an adjunct treatment but not as a substitute for the use of talking therapy to understand the thought processes underlying depression. He then cites Terruwe and Baars’ theory of wholeness, which is based on Thomist principles, as a more fruitful approach to

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<sup>612</sup> Lucas, R. A., "The Human Pharmacology of Fluoxetine", *International Journal of Obesity and Related Metabolic Disorders*, 16 (1992), pp. S49-54.

<sup>613</sup> Healy, *Let Them Eat Prozac*, p. 39.

<sup>614</sup> John-Mark Miravalle, *The Drug, The Soul and God: A Catholic Moral Perspective on Antidepressants* (Chicago: University of Scranton Press, 2010).

understanding depression.<sup>615</sup> Miravalle's approach is analogous to the Roman Catholic church's natural law objections to the contraceptive pill.

Miravalle argues – contentiously, in my view - that a Thomist account of psychology is more holistic than that of modern medical psychiatry.<sup>616</sup> He contends that Aquinas's psychology provides a fuller understanding of the nature of depression because it is based on the Thomist categories of human attributes. According to Aquinas, Miravalle argues, depression falls into the category of sorrow.<sup>617</sup> Sorrow is a form of passion, which is always a response to a certain perception of reality. In terms of Thomist ontology, sorrow is a sensitive, rather than a rational, appetite; in other words, while sorrow may not always be apprehended rationally, it elicits a sensory response.<sup>618</sup> Moreover, Miravalle states, the cause of sorrow may be the experience of a perceived evil, but the reality is that the evil is no more than a lack of, or an inappropriate absence of, a good.<sup>619</sup>

Consequently, Miravalle concludes, sorrow, as a passion, is not necessarily a bad thing of itself, because it cannot be identified directly with the evil that causes it.<sup>620</sup> Instead, sorrow is an aversion to a form of evil, and therefore a reasonable and appropriate human response. Nevertheless, Miravalle argues that, according to Aquinas, passions have a moral aspect and can be controlled, either through self-restraint, or by practising that which is good.<sup>621</sup> Consequently, passions do not lessen the freedom - and therefore moral culpability - of any action arising from them. Therefore, according to Aquinas,

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<sup>615</sup> Anna Terruwe and Conrad Baars, *Psychic Wholeness and Healing: Using ALL the Powers of the Human Psyche* (New York: Alba House, 1981), pp. 14-21.

<sup>616</sup> Miravalle, *The Drug, The Soul and God*, p. 24.

<sup>617</sup> Miravalle, *The Drug, The Soul and God*, p. 26, citing Thomas Aquinas, "Summa Theologica Q23 Article 4", 2010, [https://www.documentacatholicaomnia.eu/03d/1225-1274,Thomas\\_Aquinas,Summa\\_Theologica\\_%5B1%5D,EN.pdf](https://www.documentacatholicaomnia.eu/03d/1225-1274,Thomas_Aquinas,Summa_Theologica_%5B1%5D,EN.pdf). (accessed September 2020).

<sup>618</sup> Miravalle, *The Drug, The Soul and God*, p. 27.

<sup>619</sup> Miravalle, *The Drug, The Soul and God*, p. 36.

<sup>620</sup> Miravalle, *The Drug, The Soul and God*, p. 38.

<sup>621</sup> Miravalle, *The Drug, The Soul and God*, pp. 31-32, citing Aquinas, "Summa Theologica, Q24, Article 1".

the person who desires moral good will neither seek to eliminate the passions, nor give them free rein, but use them to strive for the good.<sup>622</sup>

Miravalle claims that contemporary neuroscientific studies support Thomas's view on affectivity. First, he states that LeDoux has shown that fear conditioning causes both an instinctual reaction and a conscious-rational analysis, but that both trigger an emotional response.<sup>623</sup> However, the problem with Miravalle's interpretation of this study is that it is hard to demonstrate experimentally that both mental processes – the instinctual and the rational – are equally causative of the emotional response. Second, he cites Ochsner's finding that negative emotional stimuli elicit a less negative reaction on re-exposure.<sup>624</sup> However, this phenomenon could equally be due to habituation - neurochemical downregulation of the response - rather than increased emotional control on the part of the person experiencing the response. Consequently, Miravalle's claim that contemporary neuroscientific studies support Thomas's classification is hard to substantiate.

Miravalle states that, while sorrow is a form of pain, it is not a self-indulgent gloominess; instead, he argues from Thomas, appropriate sorrow is a virtue, and sorrow can be an impetus for people to better themselves.<sup>625</sup> He lists Aquinas's proposed remedies for sorrow: <sup>626</sup>

- Pleasure of any kind,
- Weeping (because it is a form of release which connects the interior or exterior life),

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<sup>622</sup> Miravalle, *The Drug, The Soul and God*, p. 33, citing Aquinas, "Summa Theologica, Q24, Article 1".

<sup>623</sup> Miravalle, *The Drug, The Soul and God*, p. 34, citing Joseph LeDoux, *Cognitive Neuroscience of Emotion* (New York: Oxford University Press, 2000), pp. 129-155.

<sup>624</sup> Miravalle, *The Drug, The Soul and God*, p. 34, citing Kevin Ochsner, Silvia Bunge, James Gross and John Gabrieli, "Rethinking feelings: an fMRI Study of the Cognitive Regulation of Emotion", *Journal of Cognitive Neuroscience* 14, (2002) pp. 1215-1229.

<sup>625</sup> Miravalle, *The Drug, The Soul and God*, p. 37.

<sup>626</sup> Miravalle, *The Drug, The Soul and God*, pp. 40-41, citing Aquinas, "Summa Theologica, Q38, Articles 1 and 2".

- Sympathy of friends, and
- Physical therapies (for example, sleep and baths; Miravalle adds, rather speculatively, that Aquinas would have approved of massage and aromatherapy).

However, notwithstanding the fourth of these therapies, Miravalle argues that the remedy for sorrow is not a material one, and that physiological measures for the treatment of depression will be ultimately insufficient.

Miravalle then examines the treatment of depression from the standpoint of integrity - the wholeness of the human person. He rightly states that it is not possible to divorce ethical norms in human life from the need to encourage human flourishing. He describes the basic moral principle of integrity - that human beings should act consistently in all areas of life, and at all levels.<sup>627</sup>

Miravalle argues, however, that not all areas of human fulfilment need be pursued to the same extent, citing the moral good of celibacy in the priesthood, which forecloses the possibility of married life and procreation. The problem with this argument, however, is that it could, in fact, be used to support the use of contraception, as a means of preventing conception and birth of children, in order to achieve moral goods in other areas of life, or a greater overall moral objective in life.

Miravalle then turns his attention to the Roman Catholic teaching on oral contraception.<sup>628</sup> He cites the inseparable link between the procreative and unitive functions of marriage described in *Humanae Vitae* as an example of the principle of integrity.<sup>629</sup> He states the central tenet of the encyclical, that “marriage and conjugal love are by their nature ordained towards the begetting and education of children and that contraception rids sexuality of its procreative

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<sup>627</sup> Miravalle, *The Drug, The Soul and God*, p. 44.

<sup>628</sup> Miravalle, *The Drug, The Soul and God*, p. 50.

<sup>629</sup> Miravalle, *The Drug, The Soul and God*, p. 50, citing Pope Paul VI, Pope Paul VI, “On the Regulation of Birth: *Humanae Vitae*”, 1968, [http://www.vatican.va/content/paul-vi/en/encyclicals/documents/hf\\_p-vi\\_enc\\_25071968\\_humanae-vitae.html](http://www.vatican.va/content/paul-vi/en/encyclicals/documents/hf_p-vi_enc_25071968_humanae-vitae.html), (accessed March 2020).

nature and therefore contradicts the nature of man, woman and marriage.”<sup>630</sup> Miravalle argues from this that, just as “the personal functions of sexual union and procreation are not to be disfigured or robbed of their proper ends ...nor... are the personal functions of the emotions, specifically sorrow, to be disfigured or robbed of their proper ends” (by antidepressants).<sup>631</sup>

Miravalle’s overall conclusion is that the antidepressant culture of the post-Kramer era is “the product of a misunderstanding of, or a non-awareness of, the meaning and significance of suffering”.<sup>632</sup> Contemporary secular society, he argues, sees pleasure as the ultimate good and sorrow as the ultimate evil, and so depression has been demonised. For this reason, he claims, the cultural response is to treat depression at all costs. Consequently, in a fast-moving society which looks for rapid results and where people do not have the patience for considered analysis and reflection, there will be a temptation to use drugs, because they are convenient, and have a rapid onset of action. However, from a Thomist perspective, sorrow is not an evil in itself, and there is a need for the depressed person to regain balance by re-forming their judgements according to reality, and then re-aligning their emotions in line with those judgments.<sup>633</sup> Miravalle argues that antidepressants prevent this re-alignment, leading to a state of internal disharmony – a variance between cognition and emotion.

Miravalle concludes that, although the use of antidepressants is not “intrinsically evil”<sup>634</sup>, in that they have an important role in the treatment of urgent symptoms of depression, they are no substitute for the use of psychotherapy to deal with the root cause of the person’s sorrow, and should only ever be used in conjunction with psychotherapy. He quotes the guidance of the Pontifical Council for Pastoral Assistants; “Drug therapy is helpful if it does not obfuscate or interfere with the healing of a root problem.”<sup>635</sup> Miravalle’s dispute does not

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<sup>630</sup> Miravalle, *The Drug, The Soul and God*, p. 51-52, citing Pope Paul VI, “*Humanae Vitae*”.

<sup>631</sup> Miravalle, *The Drug, The Soul and God*, p. 54.

<sup>632</sup> Miravalle, *The Drug, The Soul and God*, p. 144.

<sup>633</sup> Miravalle, *The Drug, The Soul and God*, p. 62.

<sup>634</sup> Miravalle, *The Drug, The Soul and God*, p. 59.

<sup>635</sup> Miravalle, *The Drug, The Soul and God*, p. 75, citing the Pontifical Council for Pastoral Assistants, “*Charter for Healthcare Workers*” (1995), 100.



seem to be with the therapeutic use of antidepressants per se, but the “antidepressant culture” that Kramer envisages, where the drugs are used indiscriminately to induce “better than well” personality changes. Miravalle’s advocacy of antidepressants only as an adjunct to psychotherapy is supported by clinical trial results with SSRIs, which show that, while there is little difference in efficacy between antidepressants and psychotherapy in short-term use, psychotherapy has greater efficacy in long-term treatment.<sup>636</sup>

There are various problems with Miravalle’s evaluation of SSRI antidepressants. First, there is a methodological problem in the way in which he constructs his argument. On p. 59 of the book - before he has made any sustained analysis of antidepressants on natural law grounds - Miravalle states, “It seems to me that antidepressant drug use is not in itself intrinsically evil...However, it is not morally permissible to use these drugs as the sole or fundamental treatment for depression, since to do so would constitute an unnatural perversion of the appetitive power away from the apprehensive power..”<sup>637</sup> This gives the unfortunate impression that Miravalle’s verdict on antidepressants is a foregone conclusion, because of his prior commitment to the Roman Catholic magisterial stance on contraception. This suggests that his intention is to apply the same natural law ethical principles – uncritically – to SSRI antidepressant use, without any consideration of the social and medical ethical issues that are specific to SSRI antidepressants.

Second, in justifying his Thomist approach to psychiatry, Miravalle claims that psychiatry cannot critically evaluate the problem of antidepressant use because it “does not have a well-defined anthropology (understanding of the human person)”.<sup>638</sup> This seems to be a sweeping claim, given the person-centred roots of modern psychiatry, and the desire of many practitioners for psychiatry to be holistic in nature, issues often cited as criticisms of the biological model of depression.<sup>639</sup>

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<sup>636</sup> Glenmullen, *Prozac Backlash*, p. 189.

<sup>637</sup> Miravalle, *The Drug, The Soul and God*, p. 59.

<sup>638</sup> Miravalle, *The Drug, The Soul and God*, p. 1.

<sup>639</sup> Glenmullen, *Prozac Backlash*, pp. 189-192.

Third, a crucial problem is Miravalle's absolute rejection of the biological model for depression. At various points in the book, Miravalle dismisses the notion that depression has any biological basis – i.e. that depression might be due in part to a chemical imbalance or a genetic predisposition, as discussed earlier in this chapter.<sup>640</sup> Miravalle has good reasons to downplay the role of a biological model of depression. The biological model is at odds with Miravalle's Thomist metaphysics, because it assumes that human behaviour arises substantially from the operation of the material human body. Furthermore, Miravalle is probably keen to avoid any notion of biological reductionism, as many Christian commentators would be when faced with scientific developments with significant social and ethical implications for human life. Whereas psychiatrist Glenmullen rejects the idea of genetic inheritance of depression as ideologically driven "Darwinian propaganda" on scientific grounds,<sup>641</sup> Miravalle most likely rejects reductionism on religious grounds, because of his commitment to Roman Catholic natural law-based morality.

However, Miravalle's complete rejection of the biological model of depression is out of step with a scientific understanding of antidepressant action, in the light of the monoamine hypothesis and subsequent developments in psychopharmacology, as described previously in this chapter. There are indeed problems with the biological model for depression – for example, inability to measure levels of noradrenaline and serotonin *in vivo*, the use of surrogate endpoints in animal studies and the difficulties of quantifying results.<sup>642</sup> However, the biological model cannot simply be ignored or discounted. While response factors to antidepressants are complex and cannot be easily correlated to effects on specific biochemical systems, other evidence from psychopharmacology – for example, the role of thyroid hormone and cortisol in

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<sup>640</sup> Miravalle, *The Drug, The Soul and God*, pp. 12-14, p. 20, p. 45, p. 59, p. 70, p. 86.

<sup>641</sup> Glenmullen, *Prozac Backlash*, p. 189.

<sup>642</sup> Hillhouse and Porter, "A brief history of the development of antidepressant drugs", pp 1–21.

the regulation of depressive illness - indicates that non-neuropharmacological, biological factors are indubitably involved in the pathology of depression.<sup>643</sup>

Interestingly, in his acknowledgement of the psychological effects of SSRIs, Miravalle seems to implicitly accept that the action of these antidepressants has a biological basis.<sup>644</sup> In doing this, Miravalle is advocating a dualism of the human person, which is consistent with Aquinas' classification, but is not aligned with more recent theological anthropologies which take into account scientific understandings of humanity and advocate a non-dualistic view of the human person – for example, the non-reductive physicalism of Nancey Murphy and colleagues,<sup>645</sup> or the dual-aspect monism of John Polkinghorne.<sup>646</sup>

Fourth, and again significantly, Miravalle's natural law-based arguments concerning the use of SSRI antidepressants are flawed. His stated objective is to apply the same natural law argument to SSRI antidepressants that has been used previously to oppose hormonal contraception.<sup>647</sup> The teleology of the natural law approach seems to appeal to Miravalle.<sup>648</sup> However, for Miravalle, this teleology appears to be predetermined and therefore seems to restrict self-determination, and therefore the exercise of moral agency of the individual through personal autonomy. Miravalle argues that "man does not create himself but rather finds himself and the world around him to have a definite structure, with conditions for perfection and flourishing already determined."<sup>649</sup> He claims – strikingly – that "man cannot change his structure, so cannot reinvent conditions for fulfilment and that he can but accept them." Miravalle's assertion here is in marked contrast to the transhumanist notions discussed in Chapter 2 - that morphological freedom (ability to exist in different forms) is eminently

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<sup>643</sup> Glenmullen, *Prozac Backlash*, p. 189.

<sup>644</sup> Miravalle, *The Drug, The Soul and God*, p. 86.

<sup>645</sup> Nancey Murphy, "Human Nature, Historical, Scientific and Religious Issues", in *Whatever happened to the Soul: Scientific and Theological Portraits of Human Nature*, edited by Warren Brown, Nancey Murphy and H. Newton Malony (Minneapolis: Fortress, 1998), pp 1-2.

<sup>646</sup> John Polkinghorne, *Science and Theology: An Introduction*, (London: SPCK/Fortress, 1998), pp. 49-65.

<sup>647</sup> Miravalle, *The Drug, The Soul and God*, pp. 2-3, pp. 50-55.

<sup>648</sup> Miravalle, *The Drug, The Soul and God*, pp. 24, 45.

<sup>649</sup> Miravalle, *The Drug, The Soul and God*, p. 57.

possible and that human nature is infinitely malleable. In particular, Miravalle's assertion is at odds with the transhumanist tenet that human beings can change themselves at will due to unrestricted personal autonomy. Given the conflict described in Chapter 2 between natural law and transhumanism, Miravalle's approach here is unsurprising. Miravalle seems to contradict himself when he claims that man can make choices.<sup>650</sup> But, for Miravalle, these choices seem to be restricted to abstract moral choices framed in the traditional natural law discourse of the Roman Catholic church.

On close inspection, there are further problems arising Miravalle's natural law arguments. As he develops his argument, Miravalle states that "there is nothing intrinsically wrong with a person using chemicals for his own wellbeing even if (they)...affect his spiritual wellbeing."<sup>651</sup> This suggests that any drug use to promote "wellbeing" (however that might be defined) would, in theory, be permissible – which could be interpreted as endorsing the unrestricted use of recreational drugs to induce hedonistic experiences.

Furthermore, the doctrine of double effect is problematic for Miravalle in his argument about the use of hormonal contraception. He argues that the contraceptive pill may be used "appropriately" for the regulation of the menstrual cycle.<sup>652</sup> Yet, in this scenario, the pill would nevertheless still be exerting a contraceptive effect, and its use would still be contrary to nature, even if the woman using it was not doing so with the intention of preventing conception.

Yet another problem with Miravalle's natural law arguments is that he defends the use of analgesics for the treatment of physical pain, arguing that it is important to suppress pain to enable normal bodily function.<sup>653</sup> He then asks (rhetorically?): why would one suppress soul pain? The answer, however, would be: for the same reason as one would suppress physical pain - to enable normal functioning and provide humane treatment of a suffering person. He also defends the consumption of alcohol, stating that alcohol is consumed for many

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<sup>650</sup> Miravalle, *The Drug, The Soul and God*, p. 57.

<sup>651</sup> Miravalle, *The Drug, The Soul and God*, p. 61.

<sup>652</sup> Miravalle, *The Drug, The Soul and God*, p. 57.

<sup>653</sup> Miravalle, *The Drug, The Soul and God*, pp. 78-79.

reasons, not just its mood-altering properties.<sup>654</sup> However, many people undoubtedly consume alcohol for its mood-altering properties, and possibly not for any other reason. Miravalle's approach here is interesting, in the light of Peter Kramer's claim that, with the non-therapeutic use of Prozac, the boundaries between licit and illicit drug use are blurred and that people use street drugs all the time to feel good.<sup>655</sup>

There are further issues with Miravalle's overall argument. For example, he readily dismisses what he terms "inadequate objections" to antidepressant use.<sup>656</sup> These include, for example, a) the fact that depression may be an adaptive trait and may have some positive personality benefits, for example in driven, creative and artistic people, b) the concept of pharmacological Calvinism (the idea that using drugs is a sign of weakness, and that they must be avoided in order to "toughen up" in life) and, c) that antidepressants may be a tool for cultural manipulation and oppression, a consequence envisaged by Peter Kramer.<sup>657</sup>

These objections to antidepressant use by an individual person may be "inadequate" in Miravalle's view, from the standpoint of Catholic natural law, but they cannot be dismissed easily when considering the wider societal implications of the use of antidepressants - for example, issues surrounding fair distribution of antidepressants in society, or the impact of antidepressant use on cultural expectations in society. These are issues I will discuss in the next section of this chapter. Indeed, the notion of "pharmacological Calvinism" is highly relevant to Miravalle's own remarks concerning "soul pain", as opposed to physical pain, and how it should be treated.

The issue of cultural oppression through widespread use of specific medical interventions has huge implications for social ethics. Widespread non-therapeutic use of SSRI antidepressants may mean that more individuals will have a positive outlook on life as their default mood. This will adjust the

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<sup>654</sup> Miravalle, *The Drug, The Soul and God*, pp. 78-79.

<sup>655</sup> Kramer, *Listening to Prozac*, p. 16.

<sup>656</sup> Miravalle, *The Drug, The Soul and God*, p. 60.

<sup>657</sup> Kramer, *Listening to Prozac*, pp. 269-272.

prevailing culture concerning, for example, bereavement or justice in the workplace. If people taking SSRI antidepressants non-therapeutically do not grieve in the same way as in previous generations, there will be an increased expectation that people will be able to handle a loss and “move on” more easily, which would be unfair and unkind to the unenhanced person. The church would need to take this into account in its bereavement ministry. If people taking SSRI antidepressants non-therapeutically are likely to be more assertive and driven in the workplace, this may lead to a changed perception of what behaviour is fair and reasonable in the workplace, which would be disadvantageous to the unenhanced person.

Also, early on in his book, Miravalle dismisses the side-effect profile of SSRI antidepressants as irrelevant to any ethical consideration of whether and how antidepressants should be used.<sup>658</sup> But, in my view, in the light of the history of psychopharmacology, the low side-effect profile of SSRI antidepressants compared to older agents is an important benefit in their use, and contributes positively – and in a tangible way - to the overall impact of these drugs on human flourishing. They therefore cannot be discounted from an ethical evaluation of these drugs. Conversely, any troublesome side-effects of SSRI antidepressants are an important dis-benefit of the drugs. Malcolm Jeeves has argued – correctly, in my view – that, although the popular understanding is that newer antidepressants such as the SSRIs have fewer side-effects compared to older agents, they do have side-effects, and the impact of side-effects cannot simply be discounted.<sup>659</sup>

To conclude this section, Miravalle sets out an argument against cosmetic psychopharmacology with SSRI antidepressants firmly based on Aquinas’ understanding of human nature and a Roman Catholic natural law-based approach to moral reasoning. However, if the wider social – and especially clinical - experience of SSRI antidepressant use is taken into account, a number of significant ethical flaws in the argument become clear. This suggests that a

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<sup>658</sup> Miravalle, *The Drug, The Soul and God*, p. 2.

<sup>659</sup> Malcolm Jeeves, *Human Nature at the Millennium* (Grand Rapids: Baker/Apollos, 1997), pp. 91-92.

broader approach to the ethical evaluation of psychopharmacology is needed. The next section of this chapter will assess the use of SSRI antidepressants according to the three sets of criteria for transhumanism, to determine the extent to which Prozac and SSRI antidepressants can be regarded as transhumanist biomedical technologies.

#### 4.5. SSRIs & Transhumanism

Development of Prozac and other SSRIs was the result of previous scientific advances. In the same way that the development of the contraceptive pill was dependent on a reasonable understanding of reproductive hormonal activity and the ability to produce sex hormones synthetically, so SSRI development was dependent on the establishment of the monoamine hypothesis of depression and an understanding of the neurotransmitter actions of serotonin. However, the motivations of the developers were different. With the contraceptive pill, Sanger, McCormick - and probably Pincus too - understood the pill from a non-therapeutic perspective and had a vision of the positive benefits of the pill on society, a vision that was realised with the social impact of the pill after its launch. By contrast, Prozac was developed as a potential antidepressant and there is no evidence that the implications of non-therapeutic use were considered at the time of its development. This was mainly because depression is a disease, whereas pregnancy is not. However, it was also because of the scientific and regulatory framework in the pharmaceutical industry at that time, which was very different to the culture of the industry when the contraceptive pill was launched.<sup>660</sup> By the 1970s, pharmaceutical companies would routinely develop a large range of compounds as therapeutic candidates, to ensure that there would be at least one which would satisfy increasingly stringent clinical trial and regulatory requirements. Consequently, in response to the research on serotonin action, Bryan Molloy and colleagues at Lilly Research produced a range of molecules that had potential as serotonin-active antidepressants, of

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<sup>660</sup> For a review of the development of the scientific and regulatory environment of the pharmaceutical industry in the late twentieth century, see Jonathan Liebenau, "The Rise of the British Pharmaceutical Industry", *British Medical Journal*, 301 (1990), pp. 724-733.

which fluoxetine was just one.<sup>661</sup> Subsequently, David Wong of Lilly Clinical Research saw the potential of fluoxetine as an antidepressant from its basic pharmacology, but the molecule did not show clinical efficacy, according to the clinical trial methodology of the time, and it was only when the methodology was changed - and this change accepted by the licensing authorities – that fluoxetine could be considered as a commercial possibility.

Despite Lilly's objective of developing an effective, modern antidepressant, Prozac's "better than well" effects, and their cultural impact, were essentially serendipitous.<sup>662</sup> However, I would argue that Peter Kramer, with his exploration of the wider use of Prozac for "cosmetic psychopharmacology", and its potential social, political and ethical implications, saw the transhumanist potential of Prozac more clearly than the industry inventors of the drug. Kramer writes, "My own sense was that the media, for all the attention they paid Prozac, had missed the main story. The transformative powers of the medicine – how it went beyond treating illness to changing personality, how it entered into our struggle to understand the self – went largely unnoticed."<sup>663</sup> Moreover, David Healy, a critic of the biological model of depression and the "antidepressant culture", has nevertheless been quick to point out how psychopharmacology has changed the social order, by getting people out of mental institutions and into mainstream society, and eliminating the "hidden" population of mentally-ill people.<sup>664</sup>

The forthcoming section, however, will evaluate the extent to which Prozac and the SSRI antidepressants were, in their time, a transhumanist development according to the objective criteria for evaluation of a transhumanist development, as defined in Chapter 2, and as previously used to evaluate the contraceptive pill in Chapter 3.

#### 4.6. Evaluation of SSRIs against Transhumanist Criteria

This section will evaluate SSRI antidepressants against the three sets of objective criteria described in Chapter 2. As explained previously, the general

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<sup>661</sup> Healy, *Let Them Eat Prozac*, p. 20.

<sup>662</sup> Stapert, "Curing an Illness or Transforming the Self?", pp. 684-687.

<sup>663</sup> Kramer, *Listening to Prozac*, p. xv.

<sup>664</sup> Healy, "Psychopharmacology and the government of the self." 2000.



criteria for a transhumanist biomedical technology are those derived from the literature of transhumanism, and therefore reflect the self-understanding of these technologies by advocates of transhumanism of different types, and are used to explore whether or not the technology is transhumanist in character. The second and third sets of objective criteria, proposed by Neil Messer and Elaine Graham respectively, explore the technology from a perspective of theological ethics.<sup>665</sup> What assessment of SSRI antidepressants can be made against the general criteria for transhumanist developments, elucidated from the transhumanist literature?

First, as a chemical agent, which exerts an effect on the human body – and, in this case, on the human brain – SSRI antidepressants are indeed a technology; a material means of effecting a task or process. However, with SSRI antidepressants, especially in the light of the debate about the biological model of depression, it is fair to raise a query about what exactly that task or process is. At the basic level, the process could be defined as the relief of depression by enhancing the levels of serotonin in the brain.

Second, regardless of possible therapeutic processes, SSRI antidepressants are clearly a technology that is applied to the human person, in order to effect those processes. For example, Kahane and Savulescu describe the use of SSRI antidepressants such as citalopram for moral enhancement and claim that the ethical implications of this are no less important than the use of radical - and biologically invasive - forms of biomedical enhancement which might be available in the future.<sup>666</sup>

Third, does the human person using SSRI antidepressants have autonomy over their use? Are SSRI antidepressants used in a way that is not coercive? Given

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<sup>665</sup> Neil Messer, *Selfish Genes and Christian Ethics: Theological and Ethical Reflections on Evolutionary Biology* (London: SCM, 2007), pp. 229-235; Elaine Graham, "In Whose Image? Representations of Technology and the Ends of Humanity", in *Future Perfect? God, Medicine and Human Identity*, edited by Celia Deane-Drummond and Peter Manley Scott (London: T and T Clark International, 2006), pp. 56-69.

<sup>666</sup> Guy Kahane and Julian Savulescu, "Normal Human Variation: Refocussing the Enhancement Debate", *Bioethics*, 29 (2015), pp. 133-143.

the history and experience with SSRI antidepressant use, this third criterion is highly debatable.

In current Western healthcare systems and culture, with their emphasis on informed consent to treatment, people considering treatment with SSRI antidepressants ostensibly have autonomy - as uncoerced self-determination - to make an individual, informed and free choice about treatment at the outset. This is also the case with the contraceptive pill, and indeed with some of the proposed future transhumanist biomedical developments, as discussed previously.

However, I would argue that there may be subsequent scenarios where personal autonomy might be eroded in people taking SSRI antidepressants. An individual may choose to use a psychoactive drug in an ostensibly autonomous, self-determined way at the outset, but that autonomy may be impaired subsequently by the effects of the drug, which may affect future decisions - either any subsequent decision to discontinue the drug, or life choices while taking the drug. For example, a person's autonomy might be impaired in cases of suicidal ideation as an adverse effect of SSRI antidepressants; these are well-documented, but thankfully rare.<sup>667</sup> In a similar way, autonomy might be affected by involuntary effects of the drug; drug-induced diminished responsibility was cited as a defence for Wesbecker, a man from Kentucky, who went on a shooting spree, while being treated with Prozac.<sup>668</sup> As well as these extreme examples, SSRI antidepressants may also be associated with withdrawal effects on routine use, where a person may experience adverse effects when discontinuing the drug.<sup>669</sup> Whether there is a specific dependence syndrome with SSRIs, as there was with benzodiazepines, has been

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<sup>667</sup> Healy, *Let Them Eat Prozac*, p. 40.

<sup>668</sup> Healy, *Let Them Eat Prozac*, p. 64.

<sup>669</sup> Price et al, "A comparison of the post-marketing safety of four selective serotonin re-uptake inhibitors," pp. 757-63; Alan Schatzberg, Peter Haddad, Eric Kaplan, Michel Lejoyeux, Jerrold F. Rosenbaum, A. H. Young and John Zajecka. "Serotonin reuptake inhibitor discontinuation syndrome: a hypothetical definition", *Journal of Clinical Psychiatry*, 58 (Suppl 7) (1997), pp. 5-10.

extensively debated.<sup>670</sup> Nevertheless, this withdrawal effect may influence the willingness of patients to take the drug and raise concerns about its safety.<sup>671</sup>

Kramer considers the unintended consequences of Prozac on human characteristics in *Listening to Prozac*.<sup>672</sup> He states that society is comfortable with the idea of someone taking a drug to make small differences to their own life, but less happy for a drug to be an agent of change at a wider societal level. He considers how society might change if more people were taking a drug which, for example, enhanced their sexual appeal, or improved their business acumen. Taking one example, Kramer surmises that, if over-seriousness and introspection could be “cured” using Prozac, then society might lose its taste for brooding, melancholic, artistic people, which would have far-reaching implications for the arts and popular culture.<sup>673</sup> In addition, Kramer considers whether more widespread use of Prozac as a “mood brightener” might lead to harsher cultural expectations concerning time to grieve after a bereavement.<sup>674</sup> He also wonders how use of Prozac for personality enhancement might lead to a re-negotiation of the doctor-patient relationship.<sup>675</sup>

These observations are consistent with more recent debates about the impact of SSRI antidepressants on personal autonomy, when used for moral enhancement, previously described in Chapter 2. Savulescu and Persson propose that the SSRI antidepressant citalopram can be used for moral enhancement and increasing individual autonomy.<sup>676</sup> In response, however, Sparrow contends that the autonomy provided by pharmaceutical enhancements is illusory, that there is a risk that enhancements simply provide

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<sup>670</sup> For a summary of this debate, see David Nutt, “Death and dependence: current controversies over the selective serotonin reuptake inhibitors”, *Journal of Psychopharmacology*, 17 (2003), pp. 355-64.

<sup>671</sup> Richard Shelton, “The Nature of the Discontinuation Syndrome Associated with Antidepressant Drugs”, *Journal of Clinical Psychiatry*, 67 (Suppl 4) (2006), pp. 3-7.

<sup>672</sup> Kramer, *Listening to Prozac*, p. 13.

<sup>673</sup> Kramer, *Listening to Prozac*, p. 18.

<sup>674</sup> Kramer, *Listening to Prozac*, p. 254.

<sup>675</sup> Kramer, *Listening to Prozac*, p. 13.

<sup>676</sup> Julian Savulescu and Ingmar Persson, “Moral enhancement, freedom and the God Machine”, *The Monist*, 95 (2012), pp. 399–421.

a “fig leaf” for abuse of power and vested interests in a technically-advanced society, and that possible inequalities between enhanced and unenhanced persons could infringe the autonomy of the unenhanced.<sup>677</sup> Sparrow compares “moral enhancement” (development of moral agency) by pharmacological means with moral agency inculcated by moral and cultural education, and concludes that pharmacological moral enhancement is instrumentalist in character, compared to the influence of education or culture, as discussed in Chapter 2. Indeed, Sparrow concludes that humans would be less free in a future, technologically enhanced world than in the world as it is at present.

While moral enhancement with SSRI antidepressants is clearly a different proposal to the treatment of depression with SSRI antidepressants, the dividing line between treatment and enhancement is often blurred, as discussed in Chapter 2. Furthermore, the doctrine of double effect comes into play. A medical technology may have two effects; it may act as a therapy in one scenario, but an enhancement in another.<sup>678</sup> The doctrine of double effect would apply here as it would provide an ethical defence for a practitioner who gives a therapeutic intervention that is intended as a treatment, but which then acts unintentionally as an enhancement. The doctrine of double effect applies to the contraceptive action of the contraceptive pill when it is used therapeutically to regulate the menstrual cycle, and also to the “better than well” personality effects of SSRI antidepressants, when they are prescribed primarily to treat depression.

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<sup>677</sup> Robert Sparrow, “Better Living through Chemistry? A Reply to Savulescu and Persson on Moral Enhancement”, *Journal of Applied Philosophy*, 31 (2014), pp. 23-32.

<sup>678</sup> Brent Waters gives the example of a therapy given to an eighty-year old with heart failure. If the therapy restored their cardiac function to that of a healthy eighty-year old. it would be regarded as a treatment. However, if the person responded very well to this therapy and cardiac function improved to that expected in a healthy forty-year old, the therapy would be considered an enhancement. See Brent Waters, “Saving Us from Ourselves: Christology, Anthropology and the Seduction of Posthuman Medicine”, in *Future Perfect?: God, Medicine and Human Identity*, edited by Celia Deane-Drummond and Peter Manley Scott, (London: T and T Clark International, 2006) pp. 183-195.

Moreover, observations concerning autonomy in the treatment of individual depressed people with SSRIs support Sparrow's concerns about autonomy in society when SSRI antidepressants are used for enhancement. SSRI antidepressants may confer personality advantages on individuals who take them, which may lead to inequity between the enhanced and the unenhanced in society, and give rise to abuse of power, injustice and oppression in society.

The method of distribution of SSRI antidepressants may also affect personal choice concerning whether to take the medicine. As discussed previously, the US healthcare system has been able to distribute SSRI antidepressants widely, so that they are an easily affordable medical intervention which is quicker and cheaper to implement than psychotherapy, and this may have exerted pressure on a large number of stressed Americans to avail themselves of SSRI antidepressant treatment, simply because it is available. This raises ethical concerns, because it could be construed as coercion of patients by health commissioners and providers. Furthermore, since the system is such that the uninsured do not have access to these treatments, the system may be regarded as unjust, in the light of the ethical principle that a government should provide an adequate level of healthcare to all its citizens.

Concluding this section on autonomy, while individuals may exercise apparent autonomy when commencing SSRI antidepressant therapy, this autonomy may be impaired at subsequent points in therapy. This may be due to a direct psychopharmacological effect, such as the specific adverse effect of suicidal ideation, or the effects of SSRIs on the individual's personality, or it might be due to indirect effects, for example changes in cultural expectations or development of oppressive social tendencies due to widespread use of SSRI antidepressants.

Fourth, are SSRI antidepressants, as a medical technology, applied to human beings in order to improve human function, increase longevity and promote human flourishing? SSRI antidepressants are effective in relieving clinical depression, a potentially distressing and debilitating medical condition.<sup>679</sup> In

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<sup>679</sup> Donoghue, "Prozac: Is it worthy of the hype?", pp. 57-58.

addition, as noted, SSRI antidepressants have the potential to enhance attention, energy and alertness.<sup>680</sup> Furthermore, studies suggest that SSRI antidepressants may improve quality of life, as well as symptoms of depression,<sup>681</sup> and that relief of depression with SSRI antidepressants was associated with improved quality of life and daily physical and mental functioning.<sup>682</sup> In addition, SSRI antidepressants have a direct effect on longevity in some specific cases, where their reduced toxicity prevents a depression-related suicide by attempted overdose. There are therefore various strands of evidence to suggest that Prozac and SSRI antidepressants have largely a positive and beneficial effect on human flourishing.

In conclusion, SSRI antidepressants resemble a transhumanist technology, according to these general criteria for transhumanist technologies, with the crucial feature that their impact on personal autonomy is ambiguous, a similar finding to that shown with the oral contraceptive pill in the previous chapter. But how do SSRI antidepressants measure up against the theological criteria for ethical evaluation of biomedical developments?

I will evaluate SSRI antidepressants in the light of Neil Messer's four diagnostic questions. First, is Prozac good news for the poor? The economic costs of depression, as a debilitating disease, are well-recognised.<sup>683</sup> Halfin estimates that the direct cost of depression treatment (in a US context) is \$3.5 million per 1000 patients.<sup>684</sup> This figure is based on patients on health insurance plans, so does not account for the cost to society of untreated depression in those who do not have health insurance. Furthermore, Halfin notes that depression is often

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<sup>680</sup> Glenmullen, *Prozac Backlash*, p. 212.

<sup>681</sup> Wei-Cheng Yang, Ching-Hua Lin, Fu-Chiang Wang and Mei-Jou Lu, "Factors related to the improvement in quality of life for depressed inpatients treated with fluoxetine", *BMC Psychiatry* 17 (2017), p. 309.

<sup>682</sup> Ching Hua Lin, Yung-Chieh Yen, Ming-Chao Chen and Cheng-Chung Chen, "Relief of depression and pain improves daily functioning and quality of life in patients with major depressive disorder", *Progress in Neuropsychopharmacology and Biological Psychiatry*, 47 (2013), pp. 93-8.

<sup>683</sup> Ronald Kessler, "The Costs of Depression", *Psychiatric Clinics of North America*, 35 (2012). pp. 1-14.

<sup>684</sup> Halfin, "Depression: The Benefits of Early and Appropriate Treatment", pp. S92-S97.

under-diagnosed, and that the actual social and economic burden of undiagnosed depression is much higher, even in the insured population.

Donoghue and Pincus note that depression is likely to be associated with considerable indirect costs, because of impaired relationships, absenteeism and reduced productivity at work, and health costs that are not related directly to the treatment of depression.<sup>685</sup> Furthermore, in their review of the economic burden of depression, Lane and McDonald quite rightly argue that any evaluation of the economic costs of depression should take into account not just the acquisition costs of antidepressants, but the overall value of the treatment, in terms of long term efficacy, improved compliance, and reduced accident potential.<sup>686</sup>

However, in their economic evaluation of fluoxetine, Wilde and Benfield note that many of the available studies focus primarily on the acquisition cost of ingredients, and are from the perspective of the cost to the payor, not the cost to the patient.<sup>687</sup> Consequently, while these studies provide evidence of the cost-effectiveness of SSRIs to health providers, they do not demonstrate any direct financial benefits to the individual person receiving the therapy.

Consequently, although, in theory, SSRI antidepressants certainly will have a positive impact on the lives of poor and marginalised people, there is less direct evidence to show this.

In an American study of low-income and minority women, Miranda et al found that the use of antidepressant medication, as opposed to psychotherapy or community support, was associated with better outcome gains, in terms of treatment of depression.<sup>688</sup> This suggests that ensuring access to, and cost-effective distribution of, SSRI antidepressants in low-income populations in the

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<sup>685</sup> Julie Donoghue and Harold Pincus, "Reducing the societal burden of depression: a review of economic costs, quality of care and effects of treatment", *Pharmacoeconomics*, 25 (2007), pp. 7-24.

<sup>686</sup> Richard Lane and G. McDonald, "Reducing the economic burden of depression", *International Clinical Psychopharmacology*, 9 (1994), pp. 229-43.

<sup>687</sup> Michelle Wilde and Paul Benfield, "Fluoxetine. A pharmacoeconomic review of its use in depression", *Pharmacoeconomics*, 13 (1998), pp. 543-61.

<sup>688</sup> Jeanne Miranda, Joyce Y. Chung, Bonnie L. Green, Janice Krupnick, Juned Siddique, Dennis A. Revicki and Tom Belin, "Treating depression in predominantly low-income young minority women: a randomized controlled trial", *Journal of the American Medical Association*, 290 (2003), pp. 57-65.

US, or other Western countries has the potential to make a significant difference to depression treatment and associated quality of life for poor people. A study by Souetre et al in France has examined the effects of depression on work loss (absence from work), and the impact of four antidepressant therapies (including fluoxetine (Prozac)) and placebo.<sup>689</sup> This study, unsurprisingly, noted a positive correlation between depression severity and the risk of work loss/absence, and found that fluoxetine treatment was associated with the best antidepressant response, and the lowest level of absence from work. However, the power of this study is diminished by having five study groups, the demographics of the participants was biased towards women and those in urban areas, and it is unclear on how these results were weighted according to work type and professional characteristics.

The costs of depression to society are well-recognised, and the costs of antidepressants for health providers have been studied extensively. Furthermore, the benefits of antidepressant use – both as therapy and enhancement – largely by middle-class professionals - have been discussed in the medical and popular literature. In theory, SSRI antidepressants will have benefits in poor and marginalised populations and there is some evidence available to demonstrate this, but this evidence is limited compared to the considerable body of evidence about economic benefits to health providers. In my view, this represents an important area of opportunity, both in terms of health provision to the poor and marginalised, especially in developing countries, and research into the benefits of that provision.

Second, is the project an attempt to be “like God” (with reference to Genesis 3v5) or does it conform to the image of God? This can be argued both ways. On one hand, SSRI use for cosmetic psychopharmacology – to remould someone’s personality, as envisaged by Kramer, and change their nature - is an attempt to be “like God”. For John-Mark Miravalle, with his natural law objections to the sole use of SSRI antidepressants in depression, and his claim that SSRI

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<sup>689</sup> Souetre, E., H. Lozet, P. Martin, J. P. Lecanu, J. M. Gauthier, J. N. Beuzen and V. Ravily, "Work loss and depression. Impact of fluoxetine", *Therapie*, 48 (1993), pp. 81-8.



antidepressants short-circuit the link between cognition and emotion and thus undermine the good ends of human life, indiscriminate use of SSRI antidepressants certainly appears to be an attempt to be “like God”.

On the other hand, however, use of SSRI antidepressants responsibly enables humans to conform more closely to the image of God, because their use aligns with a theological understanding of the *imago Dei* that is functional and relational, not just substantive. The natural law approach to therapies, which the Roman Catholic church has used as the basis of its moral theology to date, is based on the idea that human nature is fixed, unchanging and immutable,<sup>690</sup> and this reflects a substantive approach to the *imago Dei* – i.e. that the image of God in humanity consists of innate attributes of substance of the human person. This notion that has been challenged scientifically, by both the theory of evolution and experimental behavioural studies.<sup>691</sup> On the contrary, functional and relational approaches to the *imago Dei* emphasise both human function (in terms of vocation or calling in the world) and human relational capacity as aspects of the image of God, rather than just substantial nature. These approaches to understanding the *imago Dei* in humanity align with observed benefits of SSRI therapy. SSRI therapy improves human biological and mental function, and thereby improves a person’s relationships with others, and enables their meaningful and positive engagement with human society. These two factors enable the person to fulfil their vocation from a Christian perspective of human flourishing.

As mentioned previously, clinical studies indicate that Prozac and other SSRIs have the potential to restore normal physical and mental function in patients who are most disabled by clinical depression.<sup>692</sup> Biological function alone is an ethically neutral concept – a functioning human body can be used for good or

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<sup>690</sup> Stephen Pope, "Theological Anthropology, Science, and Human Flourishing", in *Questioning the Human: Toward a Theological Anthropology for the Twenty-First Century*, edited by Lieven Boeve, Yves De Maeseneer and Ellen Van Stichel (New York: Fordham University Press, 2014), pp. 13-19.

<sup>691</sup> Stephen Pope, "Theological Anthropology, Science, and Human Flourishing", pp. 13-19.

<sup>692</sup> Lin, "Relief of depression and pain", pp. 93-8.

bad ends. However, as well as being itself a good of human wholeness and integrity, restoration of human function is a prerequisite for a person to achieve their full potential in society, and to be able to exercise their true vocation in the world. Restoration of human function with antidepressants therefore supports human vocation and is consistent with a functional approach to the *imago Dei*.

Furthermore, as seen from the work of Peter Kramer, SSRIs have wide-ranging effects on mood and personality, and therefore have an impact on human relationships.<sup>693</sup> Kramer's work highlighted several examples of cases where taking Prozac had an impact on individual relationships. First, in his case study of his patient, Tess, Kramer described how Tess had had a history of parental abuse, and this caused her to enter into "degrading" relationships on an ongoing basis, at cost to her wellbeing.<sup>694</sup> However, treatment with Prozac enabled Tess to be energised and confident, which had a positive effect on her relationships. Second, Kramer cites the example of individuals who take Prozac to improve their alertness and performance at work, which has an impact on their working relationships.<sup>695</sup> Third, Kramer described the case of Mrs B, who was prescribed Prozac for compulsive behaviour (hair pulling), but who found that the drug made her more content with her personal life, and less anxious and needy about her romantic relationships.<sup>696</sup> In her study of the use of SSRI antidepressants among university students, both therapeutically and for personality enhancement, McKinney and Greenfield cite the case of Natalie, a student who began treatment with Prozac with much reluctance, due to negative attitudes from her family, but who found that treatment with the drug was a liberating experience, which radically changed her relationship with her family.<sup>697</sup> Indeed, there are indications that antidepressants do not just have an impact on interhuman relationships, but on a person's relationship with God; Stapert describes the case of Marjorie, a woman taking Prozac, who discovered

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<sup>693</sup> Kramer, *Listening to Prozac*, p. 7.

<sup>694</sup> Kramer, *Listening to Prozac*, p. 2.

<sup>695</sup> Kramer, *Listening to Prozac*, pp. 28, 94.

<sup>696</sup> Kramer, *Listening to Prozac*, p. 267.

<sup>697</sup> Kelly McKinney and Brian Greenfield, "Self-Compliance at 'Prozac Campus'", *Anthropology and Medicine*, 17 (2010), pp.173-185.

a “fresh sense of God” as her treatment proceeded.<sup>698</sup> The use of SSRI antidepressants therefore also reflects relational approach to the *imago Dei* as well as a functional one.

To summarise, there is evidence that the use of SSRI antidepressants supports a view of human nature consistent with a comprehensive understanding of the *imago Dei*. SSRI antidepressant use supports functional and relational aspects of the image of God in humanity, and is not just concerned with substantive human attributes, which is the focus of many transhumanist technologies and proponents of transhumanism.

Third, what attitude does the project embody towards the material world, including our own bodies? Like oral contraception and some proposed future medical technologies, such as medical nanotechnology and cryogenics, but unlike some other proposed technologies, such as mind uploading, SSRI antidepressants are affirming of the material world and bodily life, in that they exert positive effects, which facilitate human flourishing, in and through the material processes of the human brain and body, rather than as a therapeutic placebo or as a biotechnology that deprecates the human body. Because they are used for their effects on mood and personality, the use of SSRI antidepressants, as material technologies, could reinforce a dualistic approach to humanity, with separate rational and material (bodily) aspects of human life. However, precisely because there is some biological basis for depression, depression has somatic symptoms. The treatment of depression therefore has somatic benefits; as stated earlier, SSRI antidepressants improve attention, energy and alertness, as well as improving mood. Consequently, SSRIs do not simply improve individual mental function, but contribute to human flourishing holistically through their positive effects, both directly on the human body, and indirectly on human society, through individual bodily function and activity. Therefore, the possibility that SSRI antidepressant use leads to mind-body dualism seems unlikely in the light of these clinical findings.

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<sup>698</sup> Stapert, "Curing an Illness or Transforming the Self?", pp. 684-687.

Fourth, what attitude does the project embody towards past failures? As described previously in this chapter, SSRI antidepressants have been hugely popular in Western society, in terms of both consumption and commercial sales. They therefore have become significant in popular culture. However, the popularity of something does not necessarily equate to pride or hubris concerning its availability and use. Bottled mineral water is popular, both in terms of consumption and commercial sales, but it is not generally regarded as the pinnacle of human technological achievement.

Just as the oral contraceptive pill has been described as the “ideal” contraceptive, so Prozac was developed as the “ideal” antidepressant, with good efficacy in the treatment of depression, combined with a favourable side effect profile and lack of toxicity in overdose. With reduced withdrawal potential compared to benzodiazepines, SSRI antidepressants were an advance on the “past failure” of benzodiazepines in psychopharmacology, and there is some evidence that clinicians were more wary about psychotherapeutic prescribing after the benzodiazepine scandal.<sup>699</sup> The development of SSRI antidepressants seems to represent the climax of rational psychopharmacology, in that there have been no therapeutic advances for depression since the 1990s,<sup>700</sup> and use of SSRIs has suppressed the exploration of new models of depression, and the investigation of new drugs.<sup>701</sup> This itself might be evidence of technological hubris and triumphalism.

Lilly’s marketing campaign for Prozac could be regarded as ruthless, in the way it discredited competitors, and exploited various opportunities.<sup>702</sup> However, this may not necessarily reflect a belief in Prozac specifically as an agent of social

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<sup>699</sup> Michael King, “Is there still a role for benzodiazepines in General Practice?”, *British Journal of General Practice*, 42 (1992), pp. 202-205; Healy, *Let them eat Prozac*, p. 34.

<sup>700</sup> Francisco López-Muñoz and Cecilio Alamo, “Monoaminergic Neurotransmission,” pp. 1563-1586.

<sup>701</sup> Laura Perez-Caballero, Sonia Torres-Sanchez, Lidia Bravo, Juan Antonio Mico and Esther Berrocoso, “Fluoxetine: a case history of its discovery and preclinical development”, *Expert Opinion in Drug Discovery*, 9 (2014), pp. 1-12.

<sup>702</sup> Donoghue, “Prozac: Is it worthy of the hype?”, pp. 57-58; Shorter, *Before Prozac*, p. 197.

transformation, but rather pride in the corporate image of Lilly, or in the development of a “blockbuster” drug in general terms, at a time when “blockbuster” drugs were much sought after by the pharmaceutical industry.<sup>703</sup>

Nevertheless, Prozac’s status as a cultural phenomenon, rather than just a medicine for depression, suggests that many people saw Prozac as a panacea for society’s ills and had elevated expectation of its value to society. Elliott describes how Prozac became an American cultural icon and was featured prominently in the popular media – in magazines, on the celebrity circuit and on chat shows.<sup>704</sup> One such magazine article, by Mauro, declared that “the bad news for Prozac might be that there is no bad news”, and that it really is a panacea.<sup>705</sup> Notwithstanding what might be regarded as cultural and media hype, not related directly to the use of the drug, there is certainly some evidence that SSRI antidepressants have been regarded by society with hubristic pride.

Having reviewed Messer’s diagnostic criteria, we now evaluate SSRI antidepressants against Elaine Graham’s areas of concern with transhumanist developments. Graham’s first area of concern is that transhumanist technologies interfere with the integrity of the individual body and can therefore have a disruptive effect on the corporate body – the community. As previously argued, unlike some other proposed future transhumanist technologies, such as mind uploading, SSRI antidepressants do not negate the body and biological life but exert positive effects through embodied life and bodily mechanisms, therefore affirming bodily life. The positive effects of SSRI antidepressants uphold the integrity of the individual body, which may in turn have a positive impact on the corporate body of society, as previously discussed. However, there is some evidence here that the positive effects of SSRI use for the individual do not necessarily benefit society, and that the effects of SSRI use on

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<sup>703</sup> David Herzberg, “Blockbusters and controlled substances: Miltown, Quaalude, and consumer demand for drugs in Postwar America”, *Studies in History of Philosophy, Biology and Biomedical Science*, 42 (2011), pp. 415-26.

<sup>704</sup> Carl Elliott, “Prozac: The Elvis of Pharmaceuticals”, *British Medical Journal*, 313 (1996), p. 950.

<sup>705</sup> Mauro, “And Prozac for all...”, pp. 44-50.

the corporate body of society may, in fact, be ambiguous. As argued by Kramer, SSRI antidepressant use may lead to cultural redefinition of important human experiences such as bereavement, which may change the dynamics of the doctor-patient relationship, both of which may have negative consequences for society.<sup>706</sup> Sparrow argues that use of SSRI antidepressants as a form of moral enhancement in society has the potential to reduce the autonomy of some people, depending on how the drugs are distributed and used in society, because “the enhancers will be wielding power over the enhanced”, which may lead to injustice and oppression.<sup>707</sup> Sparrow further notes perceptively that, compared to development of moral agency through education, with its methods of debate, discourse and reflexivity, use of SSRI antidepressants for moral enhancement is individualistic and instrumentalist – manipulating a human person towards a specific objective - and, while both approaches may have some moral value, they cannot be ethically equivalent.

Graham’s second area of concern is that transhumanist medical technologies enable unbridled autonomy in a negative manner. The availability of SSRI antidepressants gives people the option for treatment of depression, when in previous generations, no treatment option existed, and people ostensibly have choice about their treatment at the outset. However, as I argued earlier, the impact of SSRI antidepressants on autonomy and personal choice are ambiguous, and the course of SSRI antidepressant treatment is by no means associated with “unbridled autonomy”. In any case, as mentioned in the previous case study, autonomy is an ethically neutral phenomenon – it may be used to inflict selfish desires on others, or it can be used to pursue good ethical ends. SSRI antidepressants may be used for good ethical ends – to enhance mental function so that a person can be more effective in their job or relationships and thereby contribute positively to society – or for bad ethical ends – for hedonism and self-indulgence.

Graham’s third area of concern is that transhumanist medical technologies are focused too much on the user’s subjective experiences. The individual

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<sup>706</sup> Kramer, *Listening to Prozac*, pp. 13, 254.

<sup>707</sup> Sparrow, “Better Living through Chemistry?”, pp. 23-32.

subjectivism inherent in transhumanism may derive from the strong emphasis on autonomy and personal choice in choosing enhancements, which has been a key feature of transhumanist thought,<sup>708</sup> but it may also arise from the postmodern incommensurability of human experience which seems to be prevalent in some forms of transhumanism.<sup>709</sup>

However, as discussed in Chapter 2, the irony is that, although transhumanist technologies have the potential to enhance personal subjective experience of human life, because of their radical enhancement effects, they are problematic because they ultimately objectify the human body, so that the body is in danger of becoming an artefact to be engineered and manipulated at will, rather than a human person.<sup>710</sup>

SSRI antidepressants have a direct effect on the clinical course of depression in the patient – but also large-scale treatment of depression in society affects the functioning of society and reduces the economic burden of depression. I would therefore argue that, while SSRIs do enhance the subjective experience of a person, due to their mental effects, when they are used in a widespread manner, their use affects society as a whole and so their use cannot be a wholly individualistic experience.

Sartorius suggests that the incidence of depressive illness may increase in future, due to demographic changes, increased life expectancy and increasing incidences of iatrogenic depression (depression induced by medical treatment). In this situation, the use of new antidepressant treatments, which do not require extensive intervention by specialist mental healthcare personnel, will become an ethical imperative.<sup>711</sup> I tend to agree with this view, and therefore would argue that the need for a Christian ethical evaluation of these therapies is pressing. The evaluation of SSRI antidepressants against the criteria defined in

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<sup>708</sup> World Transhumanism Association, “Transhumanist Declaration”, pp. 54-55.

<sup>709</sup> See Bostrom on FM 2030 (Bostrom, “History of Transhumanist Thought”, pp. 1-25).

<sup>710</sup> Cole-Turner, “Towards a Theology for the Age of Biotechnology”, pp. 142-143, 147

<sup>711</sup> Norman Sartorius, “The economic and social burden of depression”, *Journal of Clinical Psychiatry*, 62 (Suppl) (2001), pp. 8-11.

Chapter 2, to determine the extent to which they were, in their time, a transhumanist development, helps to provide this assessment, in a way that goes beyond the natural law-based ethical approaches that have characterised previous Christian responses to both the contraceptive pill and SSRI antidepressants.

The findings of this chapter indicate that, like the contraceptive pill, SSRI antidepressants conform to the criteria for transhumanist developments, in that they are a technology which is applied to the human person and is one that, largely, has a beneficial effect on human flourishing. Furthermore, SSRI antidepressants may have significant impact on human society as a whole - not just the experience of the individual. The effects of SSRI use are therefore both individual and corporate. Furthermore, given their success as a therapy and their potential for “cosmetic” use following the Kramer phenomenon, SSRI antidepressants have been regarded by some as the supreme achievement of rational psychopharmacology in a hubristic way, in a similar way to proposed future transhumanist technologies.

Unlike transhumanist technologies that are highly technological in nature in comparison with conventional drug therapy,<sup>712</sup> (for example, mind uploading or cryogenics), SSRI antidepressants have the potential to be beneficial to the poor, although evidence is as yet limited. Unlike approaches to transhumanism that emphasise human attributes, and therefore a more substantive approach to the *imago Dei*, I have argued in this chapter that the effects and benefits of SSRI antidepressants in clinical use reflect a comprehensive understanding of the *imago Dei*, which is functional and relational, not just substantive. Unlike some forms of transhumanist technologies, such as mind-uploading, which are anti-materialist, SSRI antidepressants, like the contraceptive pill, exert positive

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<sup>712</sup> The term “high tech” therapy is currently used to describe some medicines that are administered by specialist routes and devices – for example, parenteral nutrition. See Getty Huisman-de Waal, Theo van Achterberg, Jan Jansen, Geert Wanten and Lisette Schoonhoven, “‘High-tech’ home care: overview of professional care in patients on home parenteral nutrition and implications for nursing care”, *Journal of Clinical Nursing*, 20, (2011), pp. 2125-2134.



effects and benefits by working through the human body and its mechanisms, rather than by negating biological life.

Most significantly, SSRI antidepressant use raises significant questions for personal autonomy, in the same way as contraceptive pill usage may do. A stated aim of the transhumanist movement is that individuals who are seeking biomedical enhancement can adopt a biomedical technology autonomously, as a matter of free, personal choice. Correspondingly, a key theological criticism of transhumanist technologies, raised by Elaine Graham, is that they enable unbridled autonomy in a negative manner. The evidence from the use of SSRI antidepressants suggests that, in a similar way to the contraceptive pill, neither of these extremes is true. While individual users of SSRI antidepressants can exercise autonomy in choosing them at the outset of use, adverse effects and unintended consequences with individual use, and changes in cultural expectations and societal norms if they are used widely in society, can lead to erosion of personal autonomy for the individual.

The next chapter will re-evaluate the Christian ethics of future transhumanist medical technologies, in the light of these findings from these two case studies of past therapeutic developments, the contraceptive pill and SSRI antidepressants, and answer the research questions posed in Chapter 1 of this thesis.

## **Chapter 5 – A Re-evaluation of Transhumanism**

### **5.1. Introduction**

This chapter will re-evaluate ethical issues with the future transhumanist technologies described in Chapter 2, in the light of previous experience with chemical therapeutics, as seen in the two case studies presented in Chapters 3 and 4. The chapter will begin by summarising the findings of the case studies concerning the extent to which these medicines can be classified as transhumanist developments in their time, according to the general criteria derived from the transhumanist literature, and the theological criteria, based on Messer's diagnostic questions,<sup>713</sup> and Graham's three theological considerations.<sup>714</sup>

Based on those findings, the chapter will then address the four research questions proposed in Chapter 1 of this thesis, namely:

- 1) What are the various issues of theological ethics presented by transhumanist developments?
- 2) To what extent were past therapeutic developments transhumanist technologies in their time?
- 3) What were the ethical concerns with past therapeutic developments? Have these ethical concerns been warranted in the light of subsequent experience?
- 4) How do issues identified with previous therapeutic developments inform the evaluation of future biomedical technologies?

The answer to the first of these questions will involve an extended discussion of the theological and ethical issues that have been identified with transhumanist technologies, as described in Chapter 2. The discussion will focus on four

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<sup>713</sup> Neil Messer, *Selfish Genes and Christian Ethics: Theological and Ethical Reflections on Evolutionary Biology* (London: SCM, 2007), pp. 229-235.

<sup>714</sup> Elaine Graham, "In Whose Image? Representations of Technology and the Ends of Humanity", in *Future Perfect? God, Medicine and Human Identity*, edited by Celia Deane-Drummond and Peter Manley Scott (London: T&T Clark International, 2006), pp. 56-69.

specific theological areas that were identified through the case studies as being significant areas for ethical reflection – autonomy, nature, *imago Dei*, and embodiment. The final part of the chapter will then discuss how the ethical criteria for transhumanist developments proposed in Chapter 2 can be refined, revised and developed in the light of the findings of the case studies.

## 5.2. Review of Case Study Findings

Both case studies of past therapeutic developments - the contraceptive pill and SSRI antidepressants - arose from, and were enabled by, previous scientific discoveries. In Chapter 3, I argued that the contraceptive pill was developed in a planned and deliberate manner, and those involved in its development – Sanger, McCormick and Pincus – had a clear vision of the pill as a means of transforming human society. Furthermore, the contraceptive pill is not a preventative treatment for a disorder - as pregnancy is not a disorder - but alters the function of a healthy woman. It was the first medicine to be used widely in an otherwise healthy population and so constitutes an early form of biomedical enhancement. However, due to the mass screening approach taken by the pharmaceutical industry for drug discovery during the 1970s and 1980s, the development of Prozac and the SSRI antidepressants was more serendipitous in nature. There were many drug candidates available, and several circumstantial factors led to the marketing of Prozac in particular. Furthermore, the potentially profound effects of Prozac on human society were not intended by its developers, who saw Prozac simply as a possible treatment for clinical depression. Rather, they were as a result of the experience of psychiatrists - and patients themselves - of the use of Prozac as an “enhancement” for manipulating the personality to make healthy people feel “better than well”, a phenomenon that has been described as “cosmetic psychopharmacology”. This interest in using Prozac and other SSRI antidepressants as personality enhancements has been described by scholars and commentators as the

“Prozac phenomenon.”<sup>715</sup> In both cases, there are features relating to the use of the drug that resemble those of a transhumanist technology.

However, the application of objective criteria for a transhumanist technology, as defined in Chapter 2, to these two cases enables a more detailed and nuanced analysis. In terms of the general criteria for transhumanist developments – those derived from the writings of transhumanist scholars themselves – both the contraceptive pill and SSRI antidepressants conform to three out of four of these criteria, in that each is a technology (a material means of effecting a task or process) which is applied to the human body to exert an effect and the effect is largely a beneficial one, as far as human flourishing is concerned.

The fourth general criterion for a transhumanist development is that the human person has autonomy in the use of the medical technology, and the technology is not used in a coercive way in human society. I have shown that, for both the contraceptive pill and for SSRI antidepressants, it is uncertain whether, as medical technologies, they can always be used by human beings in a truly autonomous way, with informed personal choice, arising from self-determination as a moral agent, without any form of coercion, as defined in Chapter 2. This may be because of possible unintended consequences of the use of the medicines themselves, due to their effects and adverse effects, but may also be because of coercive influences and cultural expectations concerning the use of these medicines at an individual level. In addition, it may be because of issues of justice and equity in the marketing and distribution of these products at a societal level. I will explore these issues concerning autonomy, and their implications for ethical evaluation of transhumanism, in more depth in the next section.

Concerning the specific theological criteria for consideration with a proposed transhumanist development, as developed by Neil Messer and Elaine Graham, I

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<sup>715</sup> See, for example, Joseph Glenmullen, *Prozac backlash: Overcoming the dangers of Prozac, Zoloft, Paxil, and other antidepressants with safe, effective alternatives* (New York: Simon and Schuster, 2001), pp. 7-28.

have made the following observations about the contraceptive pill and SSRI antidepressants:

- The contraceptive pill has the capacity to be “good news for the poor”, in that there is evidence of clear benefits to poor people, because of the pill’s ability to help women on low incomes to plan their families and their working life. In contrast, expensive, “high-tech” proposed transhumanist technologies, such as cryogenics and cybernetics, would probably, if available, only benefit a small percentage of wealthy people, and could be used to oppress the rest of the population. Concerning SSRI antidepressants, there is evidence that they are a cost-effective way of treating depression from the health provider’s perspective. However, there is limited evidence that they have direct benefits for the poor, although in theory they should, because of their low cost and recognised effects on cognitive function and quality of life. Nevertheless, with both medicines, benefits to the poor may be compromised by coercive and inequitable marketing and distribution arrangements for these drugs, or lack of access to the medicine, especially in third world health economies.
- Does the project enable humanity to conform to the image of God, or is it an attempt to be like God? I have shown that the effects of both the contraceptive pill and SSRI antidepressants in humans are consistent with a comprehensive approach to the *imago Dei* in humanity, which is functional, relational, and possibly eschatological, not just substantive. This contrasts with some approaches to transhumanism that emphasise, or are solely concerned with, human attributes, and therefore reflect a largely substantive approach only to the *imago Dei*, at the expense of the other approaches to the *imago Dei*. Indeed, rather than enabling humanity to fully conform to the image of God, transhumanist technologies are a means of being like God, in that they emphasise the use of technology to manipulate, redesign and “re-create” the body at will. The past therapies described cannot manipulate the body as radically as some future technologies may be able to (for example, with cybernetic body components).

- Concerning the attitude of the project towards the material world, including the human body, both the contraceptive pill and SSRI antidepressants are affirming of bodily life in that they exert their positive effects in and through the biological human body, and therefore do not negate bodily and biological life. This contrasts with some proposed transhumanist technologies, such as mind uploading, which are essentially anti-materialist, and which deprecate the human body, and downgrade experiences that are bodily in nature or that are mediated through the body. In addition, as shown earlier, the contraceptive pill has significant positive effects on society – the corporate body of humanity – as well as the health and wellbeing of the individual human body, because of its positive effects on the wellbeing of women, the role of marriage in society and the stability of family life. However, the potentially negative effect that the contraceptive pill can have on the environment, through pollution of water courses with excreted sex steroids from women using the contraceptive pill, should be noted. The effect of SSRI antidepressants on corporate society, due to their effects on the personalities and relationships of individuals, is more ambiguous; they may have both positive and negative effects on personalities and relationships, and the net overall effect on society is hard to evaluate. In any case, with both therapeutic developments, there is the question of exactly how individuals might use the beneficial effects of the therapy on their material bodies, and in their material lives. For example, the contraceptive effect of the contraceptive pill could be used to enable sexual activity with multiple sexual partners, rather than responsible family planning (although, as seen in Chapter 3, there is little evidence to suggest that this is the case). Similarly, positive mental effects of SSRI antidepressants could be used to enable a reckless, hedonistic and destructive lifestyle, rather than to promote good mental health for the individual, and a positive, selfless contribution of the individual to human society.
- What is the attitude of these projects to past failure? I have argued that introduction of the contraceptive pill has been regarded with hubris in

some societies, as a triumph of human technological achievement, similar to the way in which some transhumanist scholars - for example, Bostrom and More – view proposed future transhumanist technologies.<sup>716</sup> Nevertheless, the contraceptive pill did overcome some of the shortcomings of previous forms of contraception, and the protagonists in the development of the pill intended it to have a positive impact on previously significant issues in society, relating to family planning and human welfare, at both an individual and a social level. Furthermore, given their massive success as a therapy and their potential for “cosmetic” use following Peter Kramer’s publication, *Listening to Prozac*, SSRI antidepressants have also been regarded by some as the supreme achievement of rational psychopharmacology in a way that again could be regarded as hubristic, in a similar way to some attitudes to proposed future transhumanist technologies. The fact remains, however, that, despite their faults, SSRI antidepressants were also an improvement on previously available interventions. They were designed in order to overcome the problems of tricyclic antidepressants in clinical use, although they were not developed specifically to address social problems, in the way that the contraceptive pill was.

- Are these technologies focused excessively on the users’ individual, subjective experiences? As discussed in Chapter 2, the irony is that the effects of transhumanist technologies, in relation to whether the user is a subject or an object, are paradoxical. Transhumanist technologies are associated with radical consumer choice and individualism in the way they are applied, which has the potential to enhance the subjective experience of the user, and their status as a personal subject. At the same time, however, transhumanist technologies treat the body as an

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<sup>716</sup> Nicholas Bostrom, “Transhumanist Values”, *Journal of Philosophical Research*, 30 (Supplement) (2005), pp. 3-6.; Max More “The Philosophy of Transhumanism”, in *The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology and Philosophy of the Post-Human Future*, edited by Max More and Natasha Vita-More (Chichester: Wiley-Blackwell, 2013) p. 13.

artefact, and therefore they objectify the human body – in other words, they treat the body as an object. This problem is clearly present for both the contraceptive pill and SSRI antidepressants. This is more so with these agents than with classes of medicine whose pharmacological effects on the human body are less intrusive to human personal and social experience – for example, antihypertensive agents. The pill gives women choice about pregnancy, family life and careers, and therefore enhances the subjective experience of the user. Yet the use of the pill enables fertility to be manipulated at will, which can be done at scale in society, and therefore it has the potential to treat the female body as an object to be engineered, rather than a personal subject. In relation to this, the pill may therefore also contribute to the phenomenon of objectification of the female body in sexual relationships, as described by some feminist commentators.<sup>717</sup> The mental effects of SSRI antidepressants can also increase the subjective experience of the user, both positively or negatively. However, they too have the potential to objectify the human body, and treat it as an artefact to be engineered, when they are used to manipulate the personality, in a way that might be regarded as instrumentalist – i.e. it is a pragmatic intervention towards a specific end, rather than something of moral value in itself. This contrasts with personality changes which take place due to life experiences, such as culture or education, which have moral value in themselves. SSRI antidepressants have a direct effect on the clinical course of depression in the patient – but also large-scale treatment of depression in society affects the functioning of society and reduces the economic burden of depression. I would therefore argue that, while SSRIs do provide a benefit to the individual person, which is subjectively experienced by that person, their use as “cosmetic psychopharmacology” is a means of treating the person as an artefact that can be (self) manipulated at will.

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<sup>717</sup> For example, Betsy Hartmann, *Reproductive Rights and Wrongs: The Global Politics of Population Control* (Boston: South End Press, 1995), p. 189, and Robert Jutte’s commentary in *Contraception: A History*, translated by V. Russell (Cambridge: Polity Press, 2008), p. 288.



These findings demonstrate that the two case studies of therapeutic developments, the contraceptive pill and SSRI antidepressants, could be classed as transhumanist technologies, because of three specific features:

- a) their attributes as medical technologies, because their pharmacological effects are wide-ranging and have profound systemic effects on the individual human body;
- b) the total impact they have had on society, rather than just on the health and wellbeing of the individuals who take them, and
- c) the understanding of their application to humanity as transformational medical technologies in both scholarly and popular discourse.

However, when the specific theological criteria for transhumanist developments are applied to these two case studies to facilitate ethical analysis, a more nuanced picture of these technologies emerges. The two therapeutic case studies resemble transhumanist developments in some respects, but not others. For example, the contraceptive pill and SSRI antidepressants could be regarded as examples of technological hubris – developments which are the height of rational, scientific development in their fields, which some medical practitioners and pharmaceutical industry personnel have taken for granted, rather than treated with awe and respect, and in which they have placed excessive confidence as panaceas for human suffering. This is similar to the uncritical optimism with which proposed radical transhumanist biomedical technologies are regarded by some transhumanist thinkers – see, for example, Max More.<sup>718</sup>

In other respects, however, there may be significant differences between these therapeutic cases and transhumanist technologies, depending on the type of technology. For example, both the contraceptive pill and SSRI antidepressants mediate their positive effects through the human body; they affirm bodily life and assume a view of the world where human bodily experience is good and of moral value. This, however, is in stark contrast to some proposed transhumanist

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<sup>718</sup> As exemplified by his “No more gods, no more faith, no more timid holding back” slogan (Max More, “Philosophy of Transhumanism”, pp. 1-17).

technologies such as mind-uploading and cybernetics, which denigrate the human body, and consider it of lesser importance than mental life and cognitive function.

The issues concerning autonomy are particularly problematic. There are two issues regarding autonomy that have been identified with biomedical technologies, both of which have been identified in the two case studies. First, there is the question of whether the technology can be adopted with true autonomy and second, there is the question of the capacity of the technology itself to enable or disable the personal autonomy of the user. It is a key tenet of the transhumanist movement that technologies may be applied to the human body in an individualistic and autonomous manner and this follows logically from the roots of transhumanism in secular humanism. However, as discussed in Chapter 2, scholars such as Sparrow,<sup>719</sup> and McNamee and Edwards,<sup>720</sup> have questioned whether there can be true autonomy in a world of transhumanist technology, due to the way these technologies are then likely to be deployed in human society. With both the past therapeutic case studies presented in Chapters 3 and 4, the medical technology may be initially adopted by an individual with autonomy – uncoerced self-determination, as defined in Chapter 2 – by an individual. However, widespread deployment of the technology in human society may lead to coercive factors in how the technology is adopted and use of the technology itself may disable personal autonomy by introducing coercive factors. This suggests that autonomy is a key area for ethical reflection with future technologies and should be explored at some length in developing an ethical response to future transhumanist technologies.

The points of convergence between the evaluation of the two therapeutic case studies according to the objective criteria for transhumanism, and real-world experience with these therapies in practice, suggests that there are some aspects of current therapeutics that are beneficial, of moral value and which

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<sup>719</sup> Robert Sparrow, “Better Living through Chemistry? A Reply to Savulescu and Persson on Moral Enhancement”, *Journal of Applied Philosophy*, 31 (2014), pp. 23-32.

<sup>720</sup> M.J. McNamee and S.D. Edwards, “Transhumanism, medical technology and slippery slopes”, *Journal of Medical Ethics*, 32 (2006), pp. 513-518.

raise no particular ethical concerns. For example, experience has shown that the contraceptive pill has indeed had a positive impact on human health and flourishing, especially in poor and marginalised populations. This suggests that there may be some aspects of some future technologies that will be positive, and consistent with a Christian ethical approach to the goods of human life, and later in this chapter, I will explore these aspects in more detail.

Nevertheless, the discussion of the case studies in Chapters 3 and 4, and in this introductory section of Chapter 5, indicates there are four aspects of theological ethics arising from experience of the two previous therapeutic case studies, and the application of the theological criteria to them, which warrant extended discussion as key areas of the ethical evaluation of future biomedical technologies. These are:

- a) The extent to which the biomedical technology affects personal autonomy and with what outcomes (for both the individual moral agent and for the community).
- b) The status of biomedical technologies as natural or artificial interventions, and the appropriateness of their ethical evaluation using natural law theory. Note that this area of discussion does not directly arise from the application of the criteria to the cases, but it is a significant area of discussion given that natural law ethical objections have been raised by the Roman Catholic Church in the past with the contraceptive pill and by a Roman Catholic scholar with SSRI antidepressants, the two case studies in this thesis.
- c) The extent to which the biomedical technology affirms the material body as a prerequisite for earthly human existence and life.
- d) The approach to the *imago Dei* that the technology-enhanced human being reflects.

These four areas – autonomy, nature, embodiment and the *imago Dei* - will be discussed at length in my answer to the first research question, which follows here.

### 5.3. Question 1: What are the issues of Theological Ethics presented by Transhumanist Developments?

As discussed in Chapter 2, given the broad scope of transhumanism, both scientifically and epistemologically, corresponding theological and ethical concerns about transhumanism have been equally broad. These have included social ethical concerns, such as the impact of immortality or extreme longevity on human social issues, such as work, marriage, housing etc, potential for inequality of access to technologies, and social and cultural oppression due to inequity of access. As well as social ethical issues, theological ethical concerns have been raised with transhumanist biomedical technologies, and four specific areas of theological discussion were introduced and defined in Chapter 2.

These four domains are: a) Autonomy – the effect of the technology on personal autonomy, b) Nature – the extent to which a technology is “natural”, c) Embodiment – the extent to which a technology supports or undermines human embodiment, material life and identity, and d) *Imago Dei* – the extent to which the user of the technology conforms to an *imago Dei* which reflects the various approaches that have been described in the literature of theological anthropology, as all the different approaches are important in a Christian understanding of humanity.

These four domains merit further exploration because, following application of objective criteria, they have been identified as issues with both past therapeutic developments and they are also potential issues with proposed future transhumanist technologies. They therefore provide a link between past and future biomedical technologies, and thus a common platform for the ethical evaluation of these technologies. These issues will therefore be as relevant to future biomedical technologies as they have been to past therapeutic developments. Furthermore, there are various ambiguities inherent in these areas, which are likely to be key areas of debate in Christian ethical responses to future adoption of biomedical technologies. I will now discuss each of these four areas in detail.

### 5.3.1. Autonomy

As already indicated, the use of transhumanist biomedical technologies raises significant questions concerning the exercise of personal autonomy. A stated aim of the transhumanist movement, as described in Chapter 2 of this thesis, is that individuals who are seeking biomedical enhancement can choose to use the biomedical technology - or not - autonomously, as a matter of free, personal choice. The corresponding theological response to this, raised by Elaine Graham, is that transhumanist biomedical technologies therefore are problematic because they enable unbridled autonomy in a negative manner.<sup>721</sup>

However, the evidence from the development and use of both the contraceptive pill and SSRI antidepressants suggests that, in fact, neither scenario is true and that the relationship between the use of a technology and the autonomy of the user is a complex one. While there may be ways in which some biomedical technologies can be applied with true autonomy - defined as uncoerced self-determination - there are also situations where the biomedical technology may limit that autonomy when used as an enhancement at a societal level. This issue has been raised in respect of enhancement technologies by Sparrow, as noted in Chapter 2.<sup>722</sup>

The capacity for a widely used biomedical technology to limit personal autonomy has also been observed in respect of the two case studies. The introduction of the contraceptive pill led to the so-called “coital imperative” where women felt compelled to have sex because there was no reason not to, since the risk of pregnancy was removed by use of the pill.<sup>723</sup> Also, as discussed in Chapter 3, the methods of distribution of the contraceptive pill in developing countries in the past by some US family planning services have been criticised as coercive, in a way that does not respect the rights of local

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<sup>721</sup> Graham, “In Whose Image?”, pp. 56-69.

<sup>722</sup> Robert Sparrow, “Better Living through Chemistry? A Reply to Savulescu and Persson on Moral Enhancement”, *Journal of Applied Philosophy*, 31 (2014), pp. 23-32.

<sup>723</sup> Adrian Thatcher, *God, Sex and Gender: An Introduction*, (Oxford, Wiley-Blackwell, 2011), p. 221.

women;<sup>724</sup> Hartmann, in particular, has argued from a feminist perspective that women in developing countries have often been disempowered by such services, because of their lack of respect for local culture and the lack of information and choice provided to women.<sup>725</sup> These factors have all contributed to the autonomy of these women being compromised. This is an external influence, arising from the activities of the family planning services, but may also be an internal coercive factor due to assimilation of western attitudes. As mentioned in Chapter 3, this issue has arisen again more recently with the use of injectable and implantable hormonal contraception – for example, Depo-Provera, Norplant and NexPlanon. The risk with these forms of contraception is that they are given as an injection, and they therefore do not require the woman to participate in the process, so they have the potential to be administered with scant regard to the woman’s personal autonomy, especially in cultures where subservience is valued in a woman. There are therefore various aspects of the use of the contraceptive pill which might constitute the application of significant coercion on the woman’s personal autonomy, according to the definition of autonomy given in Chapter 2.

There are also concerns about personal autonomy arising from the use of SSRI antidepressants in some situations. As discussed in Chapter 2, drug addiction and brain washing are two scenarios cited in philosophical literature as being problematic for the concept of personal autonomy.<sup>726</sup> Both these issues are potentially applicable to the effects of SSRIs on personal autonomy in some situations. As described in Chapter 4, the withdrawal effects of SSRI antidepressants, as a result of biochemical dependence, may have a negative impact on the autonomy of users of these medicines, as they make it harder for a person to stop treatment when they want to, and may exert a psychological pressure on them to continue treatment or to dissuade them from discontinuing treatment. This scenario is essentially the “drug addiction” scenario – the

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<sup>724</sup> May, *America and the Pill*, p. 43.

<sup>725</sup> Hartmann, *Reproductive Rights and Wrongs*, pp. 200-203.

<sup>726</sup> Sarah Buss, “Personal Autonomy” *Stanford Encyclopaedia of Philosophy*, 2018, <https://plato.stanford.edu/entries/personal-autonomy/> (accessed: April 2018).

individual finds it hard to stop using the drug, even though they might want to, because of the effects of the drug – and this compromises autonomy as an expression of self-determination, because the person cannot act in an entirely self-determined way due to the biochemical effects of the drug. Furthermore, in some people, the use of SSRI antidepressants may lead to suicidal ideation – the presence of suicidal thoughts independently of symptoms of depressive illness – and, in some rare cases, have been associated with criminal actions,<sup>727</sup> and the drug has been cited as a factor in the legal defence. Although SSRI antidepressant use usually enables a user to be more rational, due to relief of clinical depression, in these cases, the person's rational functions are diminished, so this constitutes “brain washing”, where the person's autonomy as a self-governing moral agent is compromised, by an inability for rational thought induced by the drug.

In a future world of widespread, sophisticated medical interventions, one solution to the problem of negative effects of biomedical technology on personal autonomy, due to unintended consequences of use of the technology, might be to employ biomedical technologies specifically for “moral enhancement”, to ensure people always make good moral choices.<sup>728</sup> Moral bio-enhancement has been discussed in the literature, and medical interventions have been proposed for moral enhancement.<sup>729</sup>

However, moral enhancement technology would be problematic for autonomy, in my view, for two reasons. First, the fact that the biotechnology would “make” the person make good moral decisions is problematic for the concept of personal autonomy as defined in Chapter 2 – i.e. the self-determination of a person to act according to their desires and character. According to this

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<sup>727</sup> See David Healy, *Let Them Eat Prozac: The Unhealthy Relationship Between the Pharmaceutical Industry and Depression*, (New York/London: New York University Press, 2004), p. 64. Wesbecker, a man from Kentucky, went on a shooting spree and killed several people while being treated with Prozac. His lawyers cited his treatment with Prozac in a “diminished responsibility” defence.

<sup>728</sup> Thomas Douglas, “Moral Enhancement”, *Journal of Applied Philosophy*, 25 (2008), pp. 228-245.

<sup>729</sup> Julian Savulescu and Ingmar Persson, “Moral enhancement, freedom and the God machine”, *The Monist*, 95 (2012), pp. 399–421.

definition, if a person is not free to make bad decisions arising from a flawed character or perverted desires – without the influence of mind-altering drugs – then, even though the consequences of those immoral decisions might be bad, their personal autonomy is compromised. Even though, from a Christian perspective, it might seem beneficial to be biomedically enhanced to always make good decisions, a biomedically-restricted autonomy is no substitute for good decisions that are freely made by a moral agent as an exercise of free will and with a clear understanding of personal responsibility.

Second, if the moral enhancement agent changes the individual's desires and will so that they always want to make the right choice then, although the person's course of action will be aligned with their desires, those desires will arise from the neurochemical changes induced by the biotechnology, rather than from the psychological changes associated with character formation. With a coherentist view of personal autonomy, as described in Chapter 2, the person's will to act arises from the desires of their essential self. Consequently, the use of a moral enhancement biotechnology agent might appear to enable personal autonomy, but in fact it undermines it. This is because, although the development of character comes from exposure to external influences as well as innate genetic factors, the external factors in character development are likely to comprise a range of experiences of the world over time, where the person has the opportunity to reflect upon and maybe challenge those experiences. However, a biomedical technology represents a single external factor which may rapidly cause profound coercion of the person's autonomy, possibly coupled with a lack of insight on the part of the person concerning the technology's actions on the mind. For this reason, a technological cause of character change is less valuable morally than a non-technological cause of character change in respect of the exercise of autonomy.

In short, the problem with biomedical interventions for “moral enhancement” is their potential to short-circuit the process of a person reacting to, and reflecting upon, a situation where a moral decision needs to be made. This process of reaction and reflection, where a person discerns moral factors and implications in a situation as a prerequisite of making good decisions about that situation, is an important factor if moral agency is to be truly self-determined, or



autonomous. In other words, there is moral value in a person having autonomy to make a good or bad moral choice, reflecting on the choice and then making a good choice, uninfluenced by the application of biomedical technology. This issue has been identified in discussions about autonomy with potential future biomedical technologies,<sup>730</sup> and I have shown here that this has been an issue with the two case studies of previous biomedical technologies in this thesis.

The importance of reaction and reflection in the formation of autonomous moral agency has two important implications for the case studies presented in this thesis. First, the biological model of depression, as described in Chapter 4, has an underlying notion of reductionism, which suggests that depressive illness and other mental symptoms are solely the result of biochemical processes in the brain. This approach might suggest that the individual does not have conscious insight into their mental processes, and from a legal perspective, this lack of insight would undermine moral culpability for a criminal act relating to use of a drug.<sup>731</sup> Conversely, if the individual had capacity and insight into their illness, taking the drug would not in itself diminish the person's moral responsibility for committing the crime. So, even if one did accept the biological model of depression, with its reductionist premise, the personal autonomy of the person being treated is genuine if they have insight into their mental state, and therefore the capacity to react to and reflect on their desires, and this is recognised by law in human society.

Second, although medical technologies, such as SSRI antidepressants and the contraceptive pill, may be imposed upon, or alternatively restricted in, certain countries or cultures in a way that might be coercive for the people affected at a societal level, this does not prevent individual people from taking personal responsibility and exercising personal autonomy – i.e. self-determination according to the desires of the essential self - to resist coercion or to make good decisions about their health in other respects.

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<sup>730</sup> Sparrow, "Better Living through Chemistry?", pp. 23-32.

<sup>731</sup> As with the Wesbecker case, cited above. See David Healy, *Let Them Eat Prozac*, p. 64.

Experience with these case studies shows that the exercise of personal autonomy in respect of biomedical technologies has always been ambiguous. Limitations of personal autonomy are always possible with any medical technology, past or present, either due to unintended consequences or to societal or commercial external coercion. However, in most circumstances of modern life, personal autonomy is genuine and valuable, and individuals can make real choices about how to apply technology in a liberal western state. However, if appropriate *a priori* choices are not made about the deployment and use of any technology, then there is the risk that technology will be assimilated uncritically into society and, given the invasive, radical nature of some future technologies, that the technology might manipulate humanity, rather than vice versa.

In that situation, the technology may become dominant, and become an idol that is worshipped instead of God. Instead, humanity should exercise discernment in evaluating technologies, controlling their deployment and use with appropriate regulation and public policy, to ensure that the autonomy of individuals using biomedical technologies is safeguarded. This is itself an important act of responsibility – and indeed autonomy - on the part of human society and is consistent with the human vocation to be a created co-creator, under God’s authority.<sup>732</sup> God has acted freely in creating the world and he invites human creatures to exercise their will and share with him the responsibility of being creative in human society.

Saad’s observation that autonomy in medicine to date has been excessively focused on the issue of consent and is insufficiently relational is an important one.<sup>733</sup> With future, more radical biomedical technologies, the procedure of personal consent will play only a small part in the autonomy with which they are adopted. Most people will freely consent to use a technology if they experience personal benefits; this phenomenon has already been seen in the almost

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<sup>732</sup> Philip Hefner, *The Human Factor: Evolution, Culture, and Religion*, (Minneapolis: Fortress, 1993), pp. 255-277.

<sup>733</sup> Toni Saad, “The History of Autonomy in Medicine from Antiquity to Principlism”, *Medicine, Health Care and Philosophy*, 21 (2018), pp.125-137.

universal adoption of mobile telecommunications and would no doubt be seen again if, for example, retinal implants become a widely available and socially acceptable way to greatly increase visual acuity beyond current biological standards for eyesight. What will matter in future is that such technologies are introduced in such a way that the autonomy of the personal individual is safeguarded and respected in the context of the whole human community in which they are situated, not just through the atomistic process of individual, personal consent. For this to happen, appropriate public policy will be needed to ensure equitable funding and adoption of such technologies, so that anyone in that society can choose to apply a technology to themselves as a free personal choice, without external coercion, and it supports relationships in society not just the rights of the individual.

Although I have highlighted some of the ways in which the contraceptive pill and SSRI antidepressants as biomedical technologies can compromise personal autonomy, it is fair to say that, reviewing the history of their use, both these biomedical technologies have also had liberating effects. The contraceptive pill has freed women – and couples - to make personal choices about having sex and planning pregnancies, and about the lifestyle issues that accompany these decisions. SSRI antidepressants have enabled people with depression to avail themselves of effective treatment without the debilitating side-effects that were a problem with previous classes of antidepressants. Both these technologies were advances in terms of the personal choices that they offered individual users, and the benefits of choice with these advances have been significant for humanity because of the large populations in which these drugs have been used. It is possible that the more widespread use of future, more radical, biomedical technologies might also have liberating effects for a significant proportion of the population, depending on how they are introduced.

Autonomy has ambiguous aspects in medicine - and always has - but the ambiguity of autonomy should not detract from the importance of individuals and communities making good moral decisions about all aspects of life, including the good application of medical technology. In terms of future transhumanist technologies, this will be about understanding how exactly a medical technology can interfere with personal autonomy and affect a person's

agency to act morally in the world. This interference might be at the level of desire or will, or at the level of external coercive forces. Does the cybernetic body component have functionality which might act against the host's desires or will? Is the uploaded person's will or ability to act compromised by their disembodied nature? Does the distribution of either technology in society restrict how different individuals and groups in society exercise personal autonomy, in relation to each other? These problems will be addressed by users having a comprehensive knowledge about the technology and its consequences - and by developers being honest with users about the features of the technology, within the limits of current experience. Nevertheless, both these approaches might be limited by any unintended consequences of the technology. Furthermore, it is important that governments, health services and users consider all the implications of technology use prospectively, before a technology is deployed in a widespread way. Often the adoption of technologies is driven by commercial or market factors and governments and public bodies struggle to catch up. With something as important as personal autonomy – personally, socially and politically – it is important that a more rigorous and holistic approach is taken.

### 5.3.2. Nature

As discussed in Chapter 2, natural law theory proposes that there are good ends to human life, and that what is natural in the world – and for a human being – is directed towards what is morally good. In short, if something is natural, or occurs naturally in the world, it must be good, or be an expression of that which is good.<sup>734</sup> Natural law appears to assume that there is a teleology – a goal or end - of the universe. This has led some theologians such as Stephen Pope and Kevin Vanhoozer to claim that natural law is therefore incompatible with modern, post-Darwinian biological science because, they claim, this

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<sup>734</sup> Stephen Pope, "Natural Law and Christian Ethics", in *Cambridge Companion to Christian Ethics*, edited by Robin Gill (Cambridge: Cambridge University Press, 2012), pp. 67-86.

scientific approach has undermined the idea of teleology, or purpose, in the universe.<sup>735</sup>

As discussed in Chapter 2, a key theme which has emerged from transhumanist scholarship is that nature is “unfinished”.<sup>736</sup> This implies that any new biomedical technology which might enhance human attributes may have the potential to “complete” human nature. However, as discussed at length in Chapter 2, this idea is problematic because it could suggest that, because of their “flaws”, some people might not conform to the *imago Dei* now - which has implications for the person’s current status and rights as a human being. It also implies an obligation to use technology to get all human beings to the “required” standard of function. This implies that “perfection” is something that can be determined and achieved solely by human will. However, considering the Christological dimension of the *imago Dei*, I will argue later in this chapter that all human beings fall short of perfection in Christ, as the perfect image of God (see Colossians 1v15).

I have shown in the previous section that transhumanism, with its tenet of adoption of technology with complete personal autonomy, is problematic given the ambiguities with autonomy that have been seen with previous biomedical technologies. However, transhumanism, with its underlying ethos that human life can be manipulated at will with biomedical technology, also appears to be in tension with the concept of natural law, which emphasises the concept of a fixed order of creation.<sup>737</sup> Indeed, transhumanist thinkers, such as Bostrom,<sup>738</sup>

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<sup>735</sup> See Stephen Pope, “Theological Anthropology: Science and Human Flourishing”, in *Questioning the Human: Towards a Theological Anthropology for the 21st Century*, edited by Lieven Boeve, Yves De Maeseneer and Ellen Van Stichel (New York: Fordham University Press, 2014), pp. 13-19; Kevin Vanhoozer, “Human Being: Individual and Social”, in *Cambridge Companion to Christian Doctrine*, edited by Colin Gunton (Cambridge: Cambridge University Press, 1997), p. 167.

<sup>736</sup> Nicholas Bostrom, “Transhumanist Values”, *Journal of Philosophical Research*, 30 (2005), p. 3.

<sup>737</sup> Patrick Hopkins, “Is Enhancement worthy of being a right?”, in *The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology and Philosophy of the Post-Human Future*, edited by Max More and Natasha Vita-More (Chichester: Wiley-Blackwell, 2013), p. 351.

<sup>738</sup> Bostrom, “Transhumanist Values”, p. 3.

take the view that human nature can – and should – be manipulated by biomedical technology. If human “nature” is indeed malleable – and medical technology to date, especially in the area of reproductive science, suggests that it is – then, in a technology-enabled world, there can no longer be an unquestionable link between the “nature” of a creature and the moral ends to which it is directed.

The two therapies presented in the case studies of this thesis – the contraceptive pill and SSRI antidepressants – have the potential to manipulate aspects of human life that have previously been regarded as “natural” – namely, fertility and personality respectively. Consequently, both these therapies have been criticised on natural law grounds by Roman Catholic theologians or by the Roman Catholic church at an institutional level. However, I have demonstrated the problems of sole use of natural law as a mode of ethical evaluation of the contraceptive pill and SSRI antidepressants in Chapters 3 and 4 respectively, by reviewing the benefits of, and the experience with, these pharmacological interventions. If modes of ethical evaluation other than natural law are used to evaluate the contraceptive pill and SSRI antidepressants, then it would be difficult to conclude that the effects of these interventions on the human body make them “innately evil”.

Furthermore, if radical biomedical technologies are able to alter human nature easily and extensively, as will happen in the future, then the “nature” of a person would no longer reflect good moral ends. Natural law would therefore be diminished further as a mode of ethical evaluation of biomedical technologies.

Instead, a better way of assessing the moral value of the technology – the goodness, or otherwise, of its use – is by assessing actions of the users or the consequences of its use, to a greater or lesser extent, rather than its effects on nature.

In any case, using natural law as a means of ethical assessment of biomedical technologies is complicated by how “natural” is defined. This is seen in the two previous case studies. John Rock, the gynaecologist who did early work on the contraceptive pill, was content to regard the pill as a “natural” intervention, because it was composed of substances (oestrogen and progestogen) which

were similar to the reproductive hormones found naturally in the body, and which therefore mimicked their natural actions. From a scientific and medical perspective, this was a reasonable assumption. However, the church regarded the contraceptive pill as “unnatural” because it was an external agent, not originating from within the body, but which affected the normal function of the body. This was an equally reasonable assumption given the history and development of natural law theory from Aquinas onwards, but it led to a different conclusion about the acceptability of the contraceptive pill from a natural law perspective. A similar definitional issue has been at play in the development of psychopharmacology and SSRI antidepressants. During the late twentieth century, as disease knowledge of psychiatry has increased and more sophisticated treatments have become available, the DSM classification of mental health conditions has expanded, and characteristics that were previously regarded as part of normal behaviour – and therefore “natural” – have been medicalised and have been reclassified as “unnatural” disease states.

The natural law assumption is that a biological entity or process that is operating according to nature is natural and therefore directed to good ends, whereas a biological entity or process that can be manipulated at human will is “artificial”. While the idea of artifice is not itself immoral in natural law, such an artifice would be immoral if it contravened natural biological processes. However, the perspective from which a situation is viewed will determine the extent to which it can be defined “natural” or “artificial”. As discussed in Chapter 3, in the Roman Catholic papal encyclical, *Humanae Vitae*, the underlying assumption seems to be that a marriage consists of a series of apparently unconnected sex acts, possibly because of an overly physicalist interpretation of natural law. However, O’Donovan claims, rightly, that this assumption “falsifies” the true nature of marriage.<sup>739</sup> Augustine’s classic work, *On the Good of Marriage*,<sup>740</sup> which has contributed considerably to the western church’s theology of marriage, places sexual intercourse within the wider context of

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<sup>739</sup> Oliver O’ Donovan, *Begotten or Made?* (Oxford: Clarendon, 1984), p. 77.

<sup>740</sup> Augustine of Hippo, *On the Good of Marriage*, <http://www.newadvent.org/fathers/1309.htm> (accessed October 2019).

fidelity and natural association (*societas*) between man and woman and does not have a concept of sexual intercourse in marriage as a series of individual acts. In the light of Augustine's approach, a more "natural" understanding of marriage is as an ongoing, loving relationship in its entirety, and not merely a series of individual sexual acts.

With reference to the use of contraception, for many years, prior to the introduction of teaching on the so-called "rhythm method", the official position of the Roman Catholic church was that, for married couples, abstinence was preferable to contracepted sex.<sup>741</sup> Yet abstinence in marriage is as "unnatural" as the use of contraception and is probably not beneficial for the marriage relationship. It is reasonable to see how, in the light of the debate following the introduction of the contraceptive pill and the publication of *Humanae Vitae*, Bernard Häring concluded that, as a determinant of morality, biological functions could be subordinated to the good of the whole person, on the principle of integrity - and the good of the whole community, on the principle of totality.<sup>742</sup> On this basis, he argued that the use of the contraceptive pill should be acceptable to the Roman Catholic church on the principles of integrity and totality, if not on natural law grounds.

In the medical context, there are complications even in determining which biological phenomena are truly natural, at all times and in all circumstances. The Roman Catholic church sees the manipulation of fertility as "unnatural" - but fertility itself is not a natural state for a woman at all times, and it is perfectly natural for a woman not to be fertile at the infertile times of the menstrual cycle, or after the menopause.

The issue of defining what biological attributes and phenomena are "natural" will become increasingly problematic with the use of more radical biomedical

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<sup>741</sup> The Roman Catholic church may have wanted to ensure that its teaching remained faithful to Augustine's binary analysis of "marriage" versus "continence" (Augustine, *On the Good of Marriage*, 8), and were forced to place the use of contraception on the side of "continence" due to its implications for natural law.

<sup>742</sup> Bernard Häring, "New Dimensions of Responsible Parenthood", *Theological Studies*, 37 (1976), pp. 120-132.



technologies. It will be especially problematic for technologies that are a) more invasive (for example, neural threads to enable digital connectivity of the brain), b) less tangible (for example, gene therapy) or c) where there is a high degree of low-level hybridisation (for example, the use of nanotechnology for surgery and cell repair). This is because, with these technologies, it will be hard to determine what is natural or unnatural simply by observation, or even by physicochemical analysis.

From an ethical perspective, it will become more necessary than ever to regard the nature and biological function of the person as secondary and subordinate to the good of the whole person, and the welfare of the community, according to the ethical principle of totality. A biomedical technology may change human biological function, in relation to previous or “traditional” norms of biological function but could be permissible from a Christian perspective if it did not undermine the health and wellbeing of the whole person or compromise relationships, peace and justice in the community. Thus, for example, a new biomedical intervention that enabled human life expectancy to increase to two hundred years would have significant societal and cultural impact due to its effect on longevity, but if it did not affect the wellbeing of the whole person, or create injustices and imbalances in society (or if social policy were able to address such injustices and imbalances) it would not be problematic from a perspective of Christian ethics.

As well as the problems of determining what is truly “natural” in order to inform the application of biomedical technologies, there is the question about whether the concept of nature can ever be sufficient to deal with human ethical concerns from a perspective of Christian theological anthropology, an issue raised by the conclusion about natural law drawn by the Anglican Bishops at the 1958 Lambeth Conference, that because of their self-transcendent nature, humans could not be wholly subject to natural law.

Consequently, to ignore the fact that humans are self-transcendent by applying only natural law principles to ethical assessment of biomedical technologies, is to ignore a significant aspect of human experience – the way in which human beings are above nature and are seeking an understanding of the universe that

is beyond their natural selves. It is this capacity that enables a human being to perceive a transcendent God. On the contrary, transhumanist biomedical technologies enable a person to seek an artificial self-transcendence of their own making, rather than one achieved through relationship with the transcendent God.<sup>743</sup>

A natural law approach to assessing therapies is also problematic when considering psychopharmacology and the reductionist biological model of depression. The biological model of depression in psychiatry described in the previous chapter – the idea that depressive illness is based entirely on organic phenomena (an imbalance of neurotransmitters in the brain) – suggests that a specific medical condition is rooted in a specific biological state. However, this biological state is not typical and is pathological, in that it causes disease and disorder. As a disorder, depression would not therefore be regarded as “natural” by natural law theorists, even though it might arise from biological processes. Biochemical factors are significant in the pathology of depression and, from a clinical perspective, cannot be completely discounted. However, both psychiatrists - for example, Healy <sup>744</sup> - and theologians - for example, Cole-Turner <sup>745</sup>- maintain that disease states and therapeutics cannot be reduced entirely to biochemical factors.

Therefore, biological factors - whether they are “natural” or not – cannot fully account for the phenomenon of depression, and its treatment. This highlights the limitations of natural law as a means of assessing the moral status of therapeutic interventions in mental health, such as SSRI antidepressants, and suggests that their use may be desirable for the alleviation of human suffering and promotion of flourishing, even though natural law moral objections might be raised about their use. This is analogous to Bernard Häring’s advocacy of contraception on the principle of totality, that the biological functions of the

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<sup>743</sup> See Deane-Drummond’s critique of immortality as a result of secular eschatology (Deane-Drummond, *Future Perfect?* pp. 168-169)).

<sup>744</sup> Healy, *Let Them Eat Prozac*, pp. 255-260.

<sup>745</sup> Ronald Cole-Turner, “Towards a Theology for the Age of Biotechnology” in *Beyond Cloning: Religion and the Remaking of Humanity*, edited by Ronald Cole-Turner (Harrisburg PA: Trinity Press International, 2001), pp. 143-146.

person should be subordinated to the overall wellbeing of the person and the good of the whole community.

An assumption often made with a reductionist approach to human biological attributes is that the person's biological attributes determine their behaviour, and this undermines the idea of morality in human behaviour.<sup>746</sup> This would suggest that a person's ability to act as a moral agent in a self-determined, fully autonomous way is limited by their biological nature. However, I would argue that biological attributes simply represent one level at which an individual exists as a person in the world (although, as an individual, sentient being, their biological attributes will be internally consistent with their psychological capacities). Consequently, if autonomy is the ability to act with self-determination, based on the authentic self – as I have defined it throughout this thesis – then the idea that a person's "authentic self" might be the sum of their biological attributes is a secondary and derivative issue in relation to the person's ability to exercise personal autonomy at a behavioural level, based on that authentic self.

Both the contraceptive pill and SSRI antidepressants, the two case studies in this thesis, have a range of biological actions which, at one level, exert their positive effects on the experience of the user and, at yet another level, exert their impact on human society. What has a greater impact on a person's ability to act autonomously – and therefore on their moral agency – than "natural" biological attributes, is the influence of external factors that can radically undermine self-determination, such as drugs and other psychologically-effective biomedical technologies.

Interestingly, Miravalle appeals to external factors in his argument for a natural law approach to the treatment of depression. In terms of Thomist psychology, Miravalle argues that the sorrow of depression is a "passion", which is a reaction to an extrinsic evil. He argues that depression is therefore not in itself

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<sup>746</sup> See Ian G. Barbour, *Religion and Science: Historic and Contemporary Issues* (London: SCM, 1998), pp. 80-81.

bad, because it is not the extrinsic evil.<sup>747</sup> He argues that, in Thomist terms, sorrow is meant to elicit an action from the sufferer, and that the “urge to better one’s state of affairs ...is the telos of sorrow.”<sup>748</sup> He concludes that sorrow should be used for good in life, rather than treated with drugs. The implication is that the person with depression is somehow responsible for their disease, a view that is at odds with contemporary attitudes to mental illness, and indeed to other “natural” phenomena - such as homosexual orientation or neurodevelopmental variants like autism – for which the individual would not necessarily be regarded as morally culpable. For this reason, the natural law-based approach of Miravalle to the treatment of depression may not be appropriate in the context of either clinical therapy or pastoral ministry.

Apart from the question of personal responsibility, the relationship between nature and moral value is complex when considering enhancement, as opposed to therapy. McNamee and Edwards state that one argument for use of biomedical technologies to enhance the human person to a certain standard is that, in a sense, it is fairer than accepting “natural” variations in bodily functions.<sup>749</sup> However, this is only the case if all human beings are enhanced to the same baseline standard, which may not be easy to agree upon, or practical to implement. In any case, even if biomedical technology is used to enhance a person so that their bodily functions and attributes are “unnatural” by previous biological and social standards, this does not necessarily prevent that person from acting in a morally virtuous way.<sup>750</sup> Conversely, a medical technology could be “natural”, in that it is aligned with natural bodily processes, but the moral value of its use could still be questionable - either because it is instrumentalist – a pragmatic intervention to a specific end, rather than

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<sup>747</sup> John-Mark Miravalle, *The Drug, The Soul and God: A Catholic Moral Perspective on Antidepressants* (Chicago: University of Scranton Press, 2010), pp. 31-33.

<sup>748</sup> Miravalle, *The Drug, The Soul and God*, p. 40.

<sup>749</sup> McNamee and Edwards, “Transhumanism, medical technology and slippery slopes”, pp. 513-518.

<sup>750</sup> Ronald Bailey, “For Enhancing People”, in *The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology and Philosophy of the Post-Human Future*, edited by Max More and Natasha Vita-More (Chichester: Wiley-Blackwell, 2013), pp. 327-344.

something of innate moral value - or because it encourages an arrogant or hubristic attitude on the part of the user towards his fellow human beings, or the world's resources. An example of this would be the use of anxiolytic agents as "chemical coshes" in agitated care home residents to sedate them for the convenience of the staff and the benefit of the service, rather than in the resident's best interest. If biomedical technology were regularly applied to human beings in an instrumentalist manner, as discussed in Chapter 2 and earlier in this chapter, this would be bad as it would make personal autonomy and the exercise of the will routinely dependent on the effects of a biomedical technology, which could be deployed in society in an oppressive way. Furthermore, as described, a key issue with instrumentalist application of biomedical technologies at a personal level is that it short-circuits the process of insight, reflection and deliberation that should properly underlie the development of moral agency.

Nevertheless, although human nature cannot be entirely reduced to biological factors, it is biologically grounded, as seen in the biological model of depression. In his discussion of transhumanism and natural law, Hopkins contends that even transhumanists think that human nature is biologically grounded, or there would be no "basic" human nature to enhance.<sup>751</sup>

Nevertheless, both the therapeutic case studies in this thesis indicate that social and cultural factors, not just biological factors, are important when considering the benefits of a medical technology for human life and flourishing. The benefits of the contraceptive pill on human flourishing are not just related to its biological effects on the individual woman's fertility, but its derivative effects on sexual relationships, family life and the role of women in society. The benefits of Prozac on human flourishing are not just related to its biological effects on an individual's mood, but its derivative effects on their motivation and relationships.

Looking at the benefits of these therapies from an ethical perspective, the Roman Catholic church and its moralists have argued that with previous therapeutic developments - the contraceptive pill and SSRI antidepressants, the

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<sup>751</sup> Hopkins, "Is enhancement worthy of being a right?", p. 351.

two case studies presented here – the use of these technologies is immoral primarily because natural law has been contravened. However, I have demonstrated in the case studies that there are other ethical benefits associated with the use of these technologies. Use of the contraceptive pill can lead to ethical goods such as planned pregnancy, stable family life, improved health and welfare, especially for women, and more equitable sexual relationships. These benefits have been described at length in the literature since the development of the contraceptive pill.<sup>752</sup> Similarly, use of SSRI antidepressants can lead to ethical goods of the relief of depression, and improvement of human function and quality of life – and, significantly, the lifting of the socio-economic burden associated with depression. Again, the potential benefits of the use of antidepressants have been described extensively in the literature.<sup>753</sup> I would acknowledge that the ethical benefits in both cases are derived either from the anecdotal evidence of historians and commentators – for example, Elaine May with the contraceptive pill or Peter Kramer with SSRI antidepressants<sup>754</sup> - or from the interpretation of economic studies in the case of SSRI antidepressants and their benefits for the poor,<sup>755</sup> rather than direct observation. Nevertheless, these ethical benefits have indeed been identified and discussed in the literature since these medicines were first marketed. Yet the Roman Catholic church still prohibits these medical interventions on natural law grounds, despite the ethical benefits of both interventions, which have been identified during the years since they were first introduced.

The natural law approach to ethical evaluation used with previous medical technologies, as has been the standard treatment by the Roman Catholic church, represents only one possible approach for ethical evaluation of

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<sup>752</sup> For a good summary, see Thatcher, *God, Sex and Gender*, pp. 211-220.

<sup>753</sup> Aron Halfin, “Depression: The Benefits of Early and Appropriate Treatment”, *American Journal of Managed Care*, 13 (2007), pp. S92-S97.

<sup>754</sup> Elaine Tyler May, *America and the Pill: A History of Promise, Peril and Liberation* (New York: Basic Books, 2010), pp. 50-80; Kramer, *Listening to Prozac*, pp. 1-21.

<sup>755</sup> See especially Julie Donoghue and Harold Pincus, “Reducing the societal burden of depression: a review of economic costs, quality of care and effects of treatment”, *Pharmacoeconomics*, 25 (2007), pp. 7-24.

biomedical technologies. However, during the years of the therapeutic revolution (1950-1990), there have been very few attempts by non-Roman Catholic ethicists to formulate an ethic of medical therapeutics that is not based on natural law principles, and yet is explicitly Christian in character, as opposed to the prevailing secular bioethics.

There are some notable exceptions. Anglican theologian Oliver O'Donovan explored the distinction between person and artifice in the application of reproductive technologies, in his 1984 publication, *Begotten, Not Made*.<sup>756</sup> In the early 1980s, the Anglican medical ethicist, Gordon Dunstan, made a theological case for downgrading the moral status of the early foetus, appealing to Aquinas's view that the foetus was not endowed with a soul until it was fully formed.<sup>757</sup> Although Dunstan's work does not relate directly to therapeutics, and has since been contested by Jones, on both theological and scientific grounds,<sup>758</sup> it was nevertheless influential in the deliberations of the Warnock Committee in 1984.<sup>759</sup> In *Selfish Genes and Christian Ethics*, Neil Messer, a theologian of the United Reformed Church, examines six issues that arise from a Christian critique of evolutionary biology, using relevant Christian doctrines, such as creation and Christology, to develop the dialogue.<sup>760</sup> The overall concept that Messer explores is the possibility that human beings can redesign themselves with biomedical technology. Arising from this, Messer formulates the four diagnostic questions that could be used to assess the acceptability of a

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<sup>756</sup> O' Donovan, *Begotten or Made?* p. 77.

<sup>757</sup> Gordon Dunstan, "The moral status of the human embryo: a tradition recalled", *Journal of Medical Ethics*, 10 (1984), pp. 38-44.

<sup>758</sup> David Jones, "Dunstan, the Embryo and Christian Tradition," *Journal of Medical Ethics*, 31 (2005), pp. 710–714.

<sup>759</sup> Mary Warnock (Chair), "Report of the Committee of Inquiry into Human Fertilisation and Embryology", 1984, <https://www.hfea.gov.uk/media/2608/warnock-report-of-the-committee-of-inquiry-into-human-fertilisation-and-embryology-1984.pdf> (accessed September 2019).

<sup>760</sup> See Neil Messer, *Selfish Genes and Christian Ethics: Theological and Ethical Reflections on Evolutionary Biology* (London: SCM, 2007), pp. 1-6, and review by Southgate (Christopher Southgate, "Book Review: Neil Messer, *Selfish Genes and Christian Ethics: Theological and Ethical Reflections on Evolutionary Biology*", *Studies in Christian Ethics*, 21 (2008), pp. 142-143).

biotechnological project from a perspective of Christian ethics, and which are used as one of the sets of criteria for evaluation of a transhumanist biomedical technology in this thesis.

As discussed in this section, and in Chapters 3 and 4 in relation to the case studies, the application of natural law theory in medicine is potentially problematic. Furthermore, the case studies demonstrate that, not only have cultural factors influenced the development of these therapeutic interventions, the effects of these therapies on individual human beings, and collectively on human society, have had profound cultural implications. Cultural factors and assumptions are therefore closely linked with perceptions of the effects of a medical technology on nature and these factors will influence natural law-based ethical assessments of biomedical technologies. It may be difficult to remove cultural aspects completely from any natural law-based ethical assessment of a biomedical technology, but they must at least be accounted for.

The case studies also demonstrate the importance of personal autonomy in the adoption of readily accessible medical technologies. Both the contraceptive pill and Prozac have become widely used because individual people have been willing to use them to improve their health and quality of life, irrespective of the wishes of healthcare practitioners, or the public health priorities of the state. When a medical technology is readily accessible and can be used universally, personal autonomy becomes a significant factor in whether a technology is used in a widespread manner in human society and is able to fully exert its effects on that society. In a scientific and healthcare context, considerations about the nature of a biomedical technology are of lesser significance. In this situation, therefore, whether or not a technology can be used with autonomy and the effects of the technology on autonomy have a greater influence on the question of whether the technology is ethically good than any arguments derived solely from the effects of the technology on human nature.

There are also concerns with natural law that arise from human embodiment. I argued in Chapter 2 that, historically, embodiment has been regarded as a significant aspect of human life in Christian doctrine. If human life is – and should be - biological, then there is an essential human nature, which is



grounded in biological features. There are some things that a human being simply cannot be, by virtue of the properties of the material from which he or she is made. There are therefore features of humanity that can serve as a baseline prior to the application of any biomedical technology. However, it is increasingly clear scientifically that this essential human nature may be biologically grounded, but it is by no means absolute. There is an extent to which the definition of human nature is arbitrary and can be manipulated by social and cultural factors.

Consequently, the influence of society and culture is of increasing significance in discussions about standards for enhancement. Therefore, such standards should be owned publicly and be part of public discourse, rather than being a technical or commercial endeavour. This would be reflected in public policy; Wolbring has argued that policy-makers should agree basal levels of human function, to develop an equitable framework for the regulation of enhancement technologies.<sup>761</sup> So, while at present, public health policy decisions are concerned with preventive medicine and basic standards of human living, in future they might encompass basic standards for human function and capacities. This would then inform the activities of the health and care service, which are currently often reactive rather than proactive. Such an approach would align well with the increased significance that both human rights and distributive justice have had in medical ethics in more recent years.<sup>762</sup> Nevertheless, such an approach may be controversial from a Christian perspective because it shifts responsibility for the definition of human nature from Christian authorities – scripture and tradition – to the secular state, where it may well be subject to political manipulation or ideological influences that are anti-religious in nature.

Nature, and what is natural, are therefore relative, not absolute, measures for the evaluation of enhancement technologies. As noted above in relation to the

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<sup>761</sup> Gregor Wolbring, "Nanotechnology and the Transhumanization of Health, Medicine, and Rehabilitation", *Controversies in Science and Technology*, 3 (2010), pp. 290-303.

<sup>762</sup> Mark Jackson, *The History of Medicine: A Beginner's Guide* (London: Oneworld, 2014), p. 171.

case studies, cultural factors exercise an influence on how both human nature and medical technologies are perceived and will therefore be influential on any natural law-based ethical assessment. Furthermore, future radical biomedical technologies – if widely distributed - may themselves change attributes that were previously regarded as natural. With this relative view of nature, other ethical benefits of a biomedical technology, regardless of its status under natural law, become more significant. In her critique of transhumanism, As stated previously, Celia Deane-Drummond notes that debates about naturalism are often counter-productive, and that nature should not be conflated with spiritual considerations,<sup>763</sup> and Shapiro notes that the question of how natural an enhancement is may be a good entry point into the discussion, but it cannot constitute the whole discussion.<sup>764</sup>

Natural law has had a long and venerable history in Christian moral thinking. It appeals primarily to reason, rather than to Christian revelation (or flawed interpretation of that revelation), and the universalist claim of natural law, regardless of culture and religious tradition, is therefore appealing. It also offers universal applicability and works on the basis that every rational human being has innate moral capacity (although this equally could be derived from the *imago Dei*). Consequently, natural law, with its reliance on observation and reason alone aligns very well with post-Enlightenment rationalism and provides a point of contact between modern ethics and an earlier Christian tradition. This may account for its persistence in Roman Catholic moral thought into the 20<sup>th</sup> century, and into the era of medical technology challenges on which this thesis focuses. Indeed, with its alignment with rationalism and its emphasis on the virtuous life of a creature according to its nature, natural law might, at first sight,

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<sup>763</sup> Celia Deane-Drummond, *Theology and Biotechnology: Implications for a New Science* (London: Geoffrey Chapman, 1997), pp. 100-101.

<sup>764</sup> Michael Shapiro, "Performance Enhancement and Legal Theory" in *The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology and Philosophy of the Post-Human Future*, edited by Max More and Natasha Vita-More (Chichester: Wiley-Blackwell, 2013), p. 281.

seem to be a valuable means of ethical assessment of the benefits of modern medical science.

However, because biomedical technologies are able to change a person's nature, determining a person's nature, and thus the good moral ends arising from that nature, is becoming an increasingly elusive goal, and this is why natural law is increasingly problematic for evaluation of biomedical technologies. There are two important contributing factors to this, which can be seen in the case studies presented in Chapter 3 and 4. First, there is an increasing awareness of different cultural factors and assumptions that surround and affect the use of medical technology, which detract from an understanding of the effects of the medical technology on the nature of the person to whom it is applied. Second, there is the dominance of the will in modern healthcare, as elsewhere in modern society. Experience with the contraceptive pill and SSRI antidepressants has shown that citizens are willing to use medical technologies at their own convenience and for their own benefit so, in future, citizens may be willing to apply radical, highly-invasive technologies, which have the potential to make profound alternations to their nature with relative speed and ease. .

In addition, natural law has been closely linked with the moral theology of the Roman Catholic church, which arguably has been discredited in modern society, despite the wisdom of some of its insights, because of the church's intransigent position on contraception.<sup>765</sup> Furthermore, the contemporary world is postmodern and has a lower view of authority than in previous centuries – especially that of the church. The contemporary world is also post-foundationalist, and the evaluation of human dilemmas is not bound up with particular epistemic positions or *a priori* ideological commitments in the same way that it used to be. Consequently, the sole use of a natural law ethical approach to new biomedical technologies will not meet the current needs and expectations of the world's citizens.

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<sup>765</sup> Thatcher, *God, Sex and Gender*, pp. 211-212.

I would contend, therefore, that natural law may provide an initial approach to understanding the ethical implications of medical technologies, but it cannot be the basis for a full and thoroughgoing ethical evaluation of such technologies – either for therapy or for enhancement – in the context of a late modern or post-modern society. As Shapiro has suggested, a natural law discussion might provide an entry point into an ethical analysis. Such a discussion would highlight assumptions about nature, identify cultural factors and enable a greater understanding of exactly how the technology interacts with the human body to exert its effect. But both case studies show that, because of other non-natural law based ethical factors, a fuller Christian ethical analysis of a biomedical technology requires more than just a natural law treatment.

I therefore contend that ethical evaluation of biomedical technologies should not be restricted to a natural law-based approach, such as that which has dominated the Roman Catholic responses to both the contraceptive pill and SSRI antidepressants in the past. Instead, a range of ethical methodologies should be used for a more comprehensive approach to the ethical evaluation of new biomedical technologies. Such an approach would need to account for ethical issues such as equity of access to, and use of, technologies and a consideration of the goods of life that medical technology should support or enable.

A comprehensive approach to therapeutic ethics would be more holistic, and therefore more in line with the current holistic approach to healthcare. Moreover, a broader approach to the ethics of biomedical therapies would, in fact, be consistent with the Roman Catholic ethical principle of integrity, that people should act consistently in all areas of human life; and also that of totality, that moral decision-making should take into account the flourishing of the whole community, not just the individual. This could encompass all kinds of healthcare ethical decisions, from those that are essentially clinical or scientific to those that are concerned more with culture and social convention. Such a holistic approach might be supported by many Christian medical ethicists from Protestant traditions, but also by some Roman Catholic medical ethicists.

Other ethical approaches which might be used include consequentialist ethics or virtue ethics, which examine respectively the consequences of use of the technology or the character of the user, rather than just the nature of the technology. Modern, secular bioethics has typically tended towards ethical decision-making based on consequentialism or situationism,<sup>766</sup> with its questions of cost utility and cost benefit. However, the consequences of implementation of the technology may not all be negative, as these case studies of past therapeutic developments demonstrate.

Nevertheless, the role of human virtue in the ethical assessment of biomedical technologies is relatively unexplored. In his classic book *After Virtue*, Alasdair MacIntyre appeals to the renewal of the classic Aristotelian tradition of moral virtue in the face of the negative impact of Nietzschean existentialism on modern ethics, and the inability of modern ethical theories such as consequentialism to address the so-called “existential turn”,<sup>767</sup> where the incommensurability of the experience of human existence seems to overshadow any attempts to make value judgements on human life using ethics.

Virtue has a potential important application in medical ethics – and therefore in future biomedical enhancement ethics – because it acts as a counterbalance to consequentialism and focuses instead on the qualities and attributes of the actors, rather than the materials, the situation and the social context.<sup>768</sup> Indeed, a virtue ethics approach emphasises the importance of virtue in the good ends of human life, as natural law does, but without the problems that arise from the use of natural law in the technological world. Indeed, there has been a growing interest in the role of virtue in contemporary medical ethics. For example, in his advocacy of virtue ethics in modern medicine, Peter Gardner asserts that the virtues of the practitioner – and their attention to the human motivations, emotional sensitivities and relationships involved in the scenario – are able to

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<sup>766</sup> Ian Kerridge, Michael Lowe and David Henry, "Ethics and Evidence-Based Medicine", *British Medical Journal*, 316 (1998), pp. 1151-1153.

<sup>767</sup> Alasdair MacIntyre, *After Virtue* (London: Duckworth, 1981), pp. 256-263.

<sup>768</sup> For discussion and worked example, see Neil Messer, *SCM Study Guide: Christian Ethics* (London: SCM, 2006), pp. 121-140.

provide a fuller ethical analysis of any medical dilemma, and to lead to more creative ethical solutions than the usual appeals to either consequentialism or principlism (the idea that all scenarios in medicine can be evaluated ethically using principles).<sup>769</sup>

To conclude this section, I have argued that, despite the long-standing role of natural law in Christian ethics, a natural law-based ethical evaluation of medical technology is, on its own, deficient for the evaluation of proposed future transhumanist biomedical technologies. Natural law has not helped to present a full picture of the ethical status of past cases of therapeutics, so is unlikely to be fit for purpose when more radical, high-tech medical technologies become available in future. A wider ethical framework is needed for the evaluation of such technologies and, in answering the proposed research questions, this thesis aims to lay down the foundations for such a framework.

### 5.3.3. Embodiment

As discussed in the two case study chapters (Chapters 3 and 4), both the contraceptive pill and SSRI antidepressants exert their positive effects through beneficial actions on the human body. Indeed, given the broad survey of the therapeutic revolution in Chapter 1, the entire project of pharmacological therapeutics to date has been linked with the necessity of human embodiment. Consequently, future transhumanist technologies which would negate the human body – for example, mind uploading - would not only be problematic in respect of Christian beliefs about the significance of the material human body, as discussed in Chapter 2, they would also be a significant departure from the trajectory of progress in medical science to date.

The effects of the contraceptive pill have not been regarded in a wholly positive light from a perspective of embodiment; for example, Jutte has claimed from a feminist perspective that the use of the contraceptive pill has “disembodied” women, in that it has denigrated their bodily value by rendering their bodies

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<sup>769</sup> Peter Gardiner, "A virtue ethics approach to moral dilemmas in medicine", *Journal of Medical Ethics*, 29 (2003), pp. 297-302.

solely objects for male sexual desire,<sup>770</sup> when, in fact, proper desire should be for the whole person, not just their physical body.

As discussed, both the previous therapies described in the case studies have had considerable benefits for humanity, which may be regarded as ethical goods of human life. The “un-natural” effect of these therapies on the body – that they are synthetic “artificial” substances that interfere with the body’s “natural” functions - is a relatively small factor in the overall ethical picture of the impact of these therapies, whether positively, in terms of benefits on human life and flourishing, or negatively, in terms of possible deficits in terms of equitable distribution and coercion in their use. Furthermore, the “un-natural” nature of these previous therapies is insignificant indeed, compared to proposed future transhumanist technologies which would be radically disembodimenting, such as mind uploading, which would be the ultimate in “unnatural” interventions.

As discussed in Chapter 2, from a Christian ethical perspective, embodiment is an important, and probably necessary, prerequisite for human flourishing, because it is the ground for authentic human experience and identity. The more marginalised the human body is from human personhood, the less applicable the medical ethical principles and methods which have been developed to date will be to the evaluation of more radical future biomedical technologies. This is because these principles are largely predicated on the biological body as the object of therapeutics and medical interventions.

Apart from potential biomedical technologies which completely disembodiment the human person, such as mind uploading, there are various medical technologies that are “in between” full embodiment and complete disembodiment, such as cybernetic organs, prostheses, and implanted devices. Such technologies turn a fully biological human being into a hybrid or cyborg. Elaine Graham has claimed that, in purely technological terms, hybridisation is not a new concept, and that humans have always been “mixed up” with their technologies.<sup>771</sup> Katherine Hayles, in her study of the cyborg discussed in Chapter 2, rejects the idea of the

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<sup>770</sup> Jutte, *Contraception: A History*, p. 111.

<sup>771</sup> Graham, *In Whose Image*, p. 56.

disembodied mind but she highlights the fact that the hybridised person – composed of both human tissues and synthetic materials – has important ontological implications for what it means to be human.<sup>772</sup> These implications, in turn, have potential political consequences concerning personal identity and status in society.

This is not an issue with either of the case studies in this thesis, or even with some current inert prosthetic organs or other components, because these technologies are relatively limited and focused in their effects, but it may become an issue in future with the use of more extensive and sophisticated cybernetic technologies. This suggests that manipulation of the body is only one aspect of the impact of biomedical technological intervention, and that the technical ability to manipulate and adapt the human body should not be deployed without corresponding evaluation of the ethical impact of such manipulation on the individual person and on the society of which the person is part. Once again, the role of public policy in the regulation and management of technology adoption is highlighted as being important because this accounts for the needs of all citizens and the resources available.

#### 5.3.4. *Imago Dei*

Exactly how humans bear the image of God is an important element of a Christian understanding of what it means to be human, and for this reason, the *imago Dei* has been explored as the key to human distinctiveness, both in the light of modern evolutionary biology,<sup>773</sup> and in the light of possible future artificial intelligence.<sup>774</sup> As introduced in Chapter 2, there has been much debate about how the scriptural motif of the *imago Dei* should be understood, and four broad approaches have been proposed – substantive, functional,

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<sup>772</sup> N. Katherine Hayles, *How we became Post-Human? Virtual Bodies in Cybernetics, Literature and Informatics* (Chicago and London: University of Chicago Press, 1999), pp. 1-5.

<sup>773</sup> See, for example, J. Wentzel Van Huyssteen, “Questions, Challenges and Concerns for the Image of God”, in *Finding Ourselves After Darwin*, edited by Stanley Rosenberg (Grand Rapids: Baker, 2018), pp. 92-106.

<sup>774</sup> Noreen Herzfeld, *In Our Image: Artificial Intelligence and the Human Spirit* (Minneapolis: Fortress, 2002), pp. 25-27.



relational and eschatological.<sup>775</sup> These are all interlinked theologically and are all important in providing a comprehensive, rounded account of human life in theological anthropology. A major criticism of radical transhumanist technologies, such as mind-uploading or genetic enhancement, is that, in terms of their assumptions about human life, they reflect a substantive view of the *imago Dei*, because of their emphasis on human attributes and individualism, and they downplay functional or relational understandings of human life.

However, the two therapeutic case studies presented in this thesis - the contraceptive pill and SSRI antidepressants - have ethical implications for human life that are consistent with a functional – or vocational – and a relational view of human life and vocation. The effects of these two previous medical technologies on human life are therefore more consistent with a comprehensive understanding the *imago Dei* as described in the current literature than the likely effects on human life of proposed future technologies, which emphasise a substantive approach to the *imago Dei*, at the expense of the other approaches. Strikingly, this is despite the wholesale effects on society that have been observed since the introduction of these medicines, effects that give them the appearance of transhumanist technologies, so often suspect in the view of Christian theological ethicists.

For future biomedical technologies, it will be important to assess their effects on human lives – individually and corporately – to ensure they will not undermine any aspect of humanity that is important for the *imago Dei*. Future biomedical technologies may certainly enhance human attributes – for example, intellect, creativity ability or aesthetic capacity – and thus support a largely substantive view of the *imago Dei*. According to Kramer and advocates of cosmetic psychopharmacology, SSRI antidepressant use for personality enhancement already enhances some human attributes, such as intelligence and mental acuity. Depending on future scientific discoveries, such psychopharmacological enhancements might also eventually include more “spiritual” attributes, such as

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<sup>775</sup> Herzfeld, *In Our Image*, pp. 25-27; Michael Burdett, “The Image of God and Evolution”, in *Finding Ourselves After Darwin*, edited by Stanley Rosenberg (Grand Rapids: Baker, 2018), pp. 27-31.

self-transcendence and awareness of God. In either case, in future, people will want biomedical technologies as enhancements, precisely for the attributes they confer.

But the question for future biomedical technologies will be whether application of the technology will enable a person to conform to other aspects of the *imago Dei*, as the theological literature has understood it to date. First, will the biomedical technology affect relationships in human society? Will it affect either the extent and quality of interpersonal relationships, the distribution of communities or the cohesion of society at a regional, national or international level? Some neural and psychological enhancements may have benefits for the quality of relationships, but any technology that facilitates extreme individualism and inappropriate use of personal autonomy to oppress and exploit other people is likely to have a negative effect on relationships.

Second, will the biomedical technology affect human functioning in the *imago Dei* sense of a human person being able to fulfil the vocation to which God has called them in the world? While a functional approach to the *imago Dei* is about human vocation rather than about biological/physical functioning of the human body, nevertheless human bodily function in an embodied world is a necessary pre-requisite of vocational flourishing, as highlighted in the discussion about SSRI antidepressants in Chapter 4. Vocational flourishing may be horizontal or vertical in direction – towards the world or towards God. It may be about an individual fulfilling their unique purpose in what they do with their time and talents to serve the world, or it may be about their worship and prayer and their willingness to serve God *in* the world. In either situation, relationships are also involved with vocational function. Many enhancements of biological and mental function may assist a person in fulfilling their vocational function, but some technologies may enhance some aspects of human (biological) function at the expense of others, and these might interfere with a person's vocational function.

Another concern with transhumanism related to the *imago Dei* is that of idolatry, an issue that been discussed by J. Wentzel van Huyssteen.<sup>776</sup> The application of radical biomedical technology of human devising to a human person potentially makes that person and their attributes idols – artefacts that are worshipped instead of God. This is essentially the concern expressed by O’Donovan, where an enhanced individual becomes an artefact that has been engineered, rather than a personal subject.<sup>777</sup> There is therefore a sense in which the enhanced person is no longer made in the image of God, but in their own image, according their own will; Noreen Herzfeld discusses this concept of *imago hominis* in her work on the implications of computer artificial intelligence for the *imago Dei*.<sup>778</sup>

This notion of idolatry can be identified with the application of the two therapeutic technologies in the case studies. Because the contraceptive pill enables women to have control over their fertility, this in turn allows them to control other aspects of their lives – for example, their sexual life, relationships or career. These aspects of life may assume increased significance for the person and could lead to a situation where the person “worships” their lifestyle, as an idol, instead of God. Also, as discussed in Chapter 3, a feminist critique of the contraceptive pill is that it contributes to the objectification of women – it can make a woman’s body (rather than her whole self) the object of a man’s desire, making her an “idol” to him. Similarly, when used for cosmetic psychopharmacology, SSRI antidepressants can manipulate and control the personality, which may lead to the user becoming preoccupied with their personality traits in an inward-looking, individualistic, self-centred way. This might detract from an awareness of God and a willingness to serve him in the world, in a way that is idolatrous.

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<sup>776</sup> J. Wentzel Van Huyssteen, *Alone in the World? Human Uniqueness in Science and Theology* (Grand Rapids: Eerdmans, 2006), pp. 139-143.

<sup>777</sup> O’Donovan, *Begotten or Made?* pp. 1-6, p. 13.

<sup>778</sup> Herzfeld, *In Our Image*, pp. 25-27.

As discussed in Chapter 2, several theologians - for example, Elaine Graham, Celia Deane-Drummond and Peter Manley Scott <sup>779</sup> - take the view that creatureliness cannot be separated from technology. Indeed, Graham contends that human beings enact the *imago Dei* when they engage in technological innovation, and that human beings have always been hybridised – mixed in – with the technologies they use.<sup>780</sup> In addition, as we have noted, Hefner proposes the notion of the human being as “created co-creator” i.e. that human beings have the agency to bring about a good future from their current nature.<sup>781</sup> The inevitability of the interplay between human life and technology in a technological world, as suggested by these theologians, is at odds with the idea that biomedical technology is needed to complete a “deficient” *imago Dei* in humanity because of the difficulty of identifying the “deficiency” and the effects of technology when the relationship between human life and technology is so intricate.

The key issue here is the status of the unenhanced human being. If all humanity undeniably bears the image of God now – however that might be understood – then a biomedical technology (past or future) could be understood as a potential enhancement of the *imago Dei*, so that the person *more clearly* bears the *imago Dei*, rather than a remedy that is needed to complete a deficient *imago Dei*, or to rectify a flawed *imago Dei*, at the current time. For a person to bear more clearly the *imago Dei*, then substantive, functional and relational aspects of the *imago Dei* will be more clearly identifiable in that person’s life, but there will also be an eschatological element – that the person is more directed towards a future life that glorifies God. This will be seen in how the technology affects the person’s ability to make good ethical decisions about their life, and to use their life in the service of God and the world. This move towards a future life that

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<sup>779</sup> Graham, “In Whose Image?”, pp. 68-69; Celia Deane-Drummond, *Theology and Biotechnology: Implications for a New Science*, (London: Geoffrey Chapman, 1997), p. 93; ; Peter Manley Scott, *Anti-Human Theology: Nature, Technology and the Post-Natural* (London: SCM, 2010), p. 93.

<sup>780</sup> Graham, “In Whose Image?”, pp. 68-69.

<sup>781</sup> Hefner, *The Human Factor*, p. 27.

glorifies God is analogous to the increase in Christlikeness as the believer is transformed by the Holy Spirit and filled with the virtuous gifts of the Holy Spirit.

As pharmacological therapies, the contraceptive pill and SSRI antidepressants are technologies that are hybridised with the human body, in that they exert their good effects in and through the body. I have argued already that both can have a positive effect on the functional (vocational) and relational aspects of human life. The case studies indicate that both these technologies have the potential to enable their users to make good decisions from a Christian perspective. The contraceptive pill has the potential to help couples to exercise responsibility concerning family planning, lifestyles and careers, and therefore have the potential to strengthen relationships. SSRI antidepressants have the potential to give people increased personal confidence and strengthen positive personality traits, which have the potential to enhance the person's interaction with the world in a good way.

Similarly, future enhancements such as laser eye surgery or a cybernetic arm may improve function and experience of biological life (although they may be associated with other ethical issues) but the important question from a Christian perspective will be the extent to which these enhancements support – or undermine – an eschatological trajectory, a Godward approach to life; in other words the development of the relationship with God and the Christ-like character, and the sense in which humans are proceeding to a shared destiny provided by God.

This project evaluates the biomedical technologies – past and future – according to Neil Messer's diagnostic questions of a biotechnology project, one of which is: is the project an attempt to be like God, or does it conform to the image of God?<sup>782</sup> When future, transhumanist biomedical technologies, such as mind-uploading, cybernetics and cryonics, are evaluated against this question then, as discussed in Chapter 2, the concerns expressed by theologians seem to be warranted. Transhumanist biomedical technologies do

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<sup>782</sup> Messer, *Selfish Genes and Christian Ethics*, p. 231.

indeed seem to be individualistic, concerned only with the attributes of the individual person. They do indeed seem to provide an alternative eschatology to that of Christian belief, one which is over-realised and does not address human moral responsibility and the reality of sin.

Transhumanist technologies affect human functioning in society, and so it might be supposed that this has a bearing on the functional approach to the *imago Dei*. However, the effects of these technologies on human function serve only the individual to whom the technology has been applied, with no concept of the individual's vocation as God's agent in the created world as a whole, which is the central component of a functional account of the *imago Dei*.

When considering the contraceptive pill, the answer to Messer's question about whether the technology is an attempt to be like God, or whether it conforms to the image of God, is rather more nuanced. In the control that it affords the user over their menstrual cycle, fertility and family planning, and thereby on their marriage, family and working life, the pill does indeed have far-reaching effects, and could be used to enable users to manipulate their fertility - and their lifestyle - and to be "like God" in terms of the control they exercise over a natural aspect of human biological life. This contradicts the notion of divine order in human life, which underpins the Roman Catholic Church's natural law objections to hormonal contraception. In this respect, the contraceptive pill resembles a proposed future transhumanist technology. However, it should be noted that while the pill can interrupt the fertility process, it does not change or abolish the process. If the pill is discontinued, then conception and birth still take place in the same (natural) way afterwards, despite the use of the pill. On the contrary, some of the most radical transhumanist technological interventions – for example, mind uploading and cybernetic implants – appear to be, to all intents and purposes, irreversible. The effects of transhumanist technologies on human life are therefore likely to have more radical implications for the *imago Dei* in humanity than past therapeutic developments.

As discussed earlier, human life for people enhanced with proposed future transhumanist technological developments is individualistic and focused on human attributes. It therefore reflects a largely substantive view of the *imago*

*Dei*, and an alternative, privatised eschatology to that offered by the Christian hope. However, while the contraceptive pill does indeed affect certain human attributes – namely the ability to become pregnant, and also positive effects on human metabolism – its effects have different implications for the way humans image God. As argued in Chapter 3, the contraceptive pill has some potentially beneficial effects on marriage, family and society, and these social effects of the pill are consistent with a relational *imago Dei* in humanity, where the *imago Dei* is grounded in human relationality, with God and with each other. Furthermore, the *imago Dei* envisaged by the positive effects of the contraceptive pill – most notably, greater equality and mutuality in the marriage relationship - counteracts previous feminist criticisms that formulation of the *imago Dei* has, in the past, had androcentric tendencies.<sup>783</sup> Indeed, the impact of the contraceptive pill on human relationships at all levels – in marriage, family and society - downplays an *imago Dei* that is overly focused on human attributes.

The answer to Messer's question (being like God or conforming to the image of God) is similar for SSRI antidepressants, as for the contraceptive pill - and again, is distinct from future transhumanist biomedical technologies. Cosmetic psychopharmacology, as envisaged by Peter Kramer and supporters of the "Prozac phenomenon", is where the person has the ability to remould their personality and change the kind of person they are at their own instigation, by technological means. This would be a more radical means of personality change than, for example, counselling or personal development, and would be applied with greater control and will power, so could be seen as an attempt to be like God. This probably underpins John-Mark Miravalle's objection to Prozac and SSRI antidepressants as a sole therapy for depression on natural law grounds.<sup>784</sup> However, because the effect of SSRI antidepressants on the human being – personality alteration – is more subtle than that of the contraceptive pill on fertility, the effects of SSRI antidepressants are harder to identify or control

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<sup>783</sup> Mary McClintock Fulkerson, "Contesting the Gendered Subject: A Feminist Account of the *Imago Dei*", in *Horizons in Feminist Theology: Identity, Traditions and Norms*, edited by Rebecca Chopp and Sheila Davaney (Minneapolis: Fortress, 1997), pp. 99-115.

<sup>784</sup> Miravalle, *The Drug, The Soul and God*, p. 55.

than the pill, and may therefore be more far-reaching than expected. Nevertheless, like the contraceptive pill, the use of SSRI antidepressants supports human life and flourishing in a way that is consistent with a comprehensive understanding of the *imago Dei*, rather than one which only has substantive attributes in view and in which the eschatological dimension has been undermined. This is due to the positive effects of SSRI antidepressants on human relationships, as described by Kramer,<sup>785</sup> and their ability to restore biological function in those debilitated with severe depression. These, in turn, have positive effects on an individual's ability to engage with the world, and to exercise a vocation of service to God in the world, which would be the outworking of a functional approach to the *imago Dei*.

There are two caveats here. First, the clinical data concerns restoration of biological and mental function in patients with depression but does not extend to objective functional improvement in otherwise healthy individuals who might use SSRI antidepressants for personality enhancement. Nevertheless, such functional improvements can be inferred from Kramer's clinical vignettes, for example the use of SSRI antidepressants giving patients the confidence and self-esteem to tackle negativity and problems in their lives, or to make a positive contribution in their professional life and communities.<sup>786</sup> The positive impact of a person's life and activities on their community and professional contexts links clearly with the vocational concept at the heart of the functional approach to the *imago Dei*. Second, improvements in functional ability and relational capacity may not necessarily lead to the spiritual response that might be expected in a person who reflects different aspects of the *imago Dei*. A spiritual response might be defined in the following terms: as flourishing, generous and realistic relationships with oneself and with other human beings, which reflect both a rich and vital relationship with God, and a functioning that is concerned with living out a divinely given vocation for humanity of service in the world (which the interpretation of the functional *imago Dei* as a "royal representative" would

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<sup>785</sup> Peter Kramer, *Listening to Prozac* (New York/London: Penguin, 1993), pp. 2, 28, 94, 267.

<sup>786</sup> Kramer, *Listening to Prozac*, pp. 2, 28, 94, 267.



entail). Whether or not an individual has true autonomy, they still have responsibility for how they live their life in relation to God and to his Kingdom, when “enhanced” with an SSRI antidepressant. Nevertheless, improvement in functional ability and relational capacity have the potential to support human flourishing because they are themselves goods of human wholeness and integrity.

Having considered these four theological domains of autonomy, nature, embodiment and the *imago Dei* in detail, I conclude that these are the four areas in which the permissibility and desirability of medical technologies – past or future – should be assessed, to understand their impact on the goods of human life from a Christian ethical perspective. I have shown that “nature” is part of this assessment process, but it is insufficient on its own, most significantly because it cannot properly address the claim of transhumanists that nature is “unfinished” and therefore needs radical technological intervention, and also because it excludes social and cultural issues and benefits with technology use. In a technological world, where nature is less significant because of its malleability, personal autonomy in decision-making about technology assumes a correspondingly greater significance, and good public policy is needed to negotiate equity issues with technology use at a societal level. Human embodiment is important because the more marginalised the human body is from human personhood, the less applicable the medical ethical principles and methods which have been developed to date will be to the evaluation of more radical biomedical technologies in future. Finally, the *imago Dei* analysis of new biomedical technologies will help with an understanding of the eschatological implications of those technologies, which may be significant if the technologies are irreversible or highly invasive. This is important given the critique that, compared with the Christian destiny envisaged by an eschatological approach to the *imago Dei*, transhumanist biomedical developments present an alternative, realised, self-centred eschatology instead. Consequently, consideration of all four domains together provide the basis for a more detailed and nuanced ethical evaluation of previous medical therapies, developed during the “therapeutic revolution” years of the twentieth century, and will provide an adequate framework for the medical ethical evaluation of future,

transhumanist biomedical enhancements. Such a framework can be used for those technologies currently envisaged but not technically feasible - for example mind-uploading or cryonics – but it could also be used proactively for those technologies which have not yet been thought of.

#### 5.4. Question 2: To what extent were the past therapeutic developments, in their time, transhumanist technologies?

In Chapter 1, I stated that pharmaceutical medicine in the second half of the twentieth century made “stirring advances.”<sup>787</sup> However, some of these advances were not simply medical advances, which could improve individual lives, but were scientific advances that had implications for the whole of society. From the time in the early twentieth century when Lorand and the organotherapists first perceived the far-reaching biological effects of hormonal therapy,<sup>788</sup> pharmaceutical medicine has entertained the possibility of radically changing the quality, conventions and experience of human life. As noted previously, David Healy has remarked on the potential of both the contraceptive pill and psychopharmacology to bring about largescale social change; the pill changing the sexual order of society, and psychopharmacology changing the social order.<sup>789</sup>

In Chapter 3, I showed that the developers of the contraceptive pill were primarily motivated by the socio-political implications of the use of the pill in society, and its potential benefits for social progress. Margaret Sanger envisaged the radical social implications of the pill, Katharine McCormick put forward the money to fund it, and Gregory Pincus was courageous enough to lead the scientific development of the pill in the face of opposition from the prevailing academic culture. Indeed, these three factors – vision of a better

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<sup>787</sup> Steven Woolf, “Evidence-Based Medicine: A Historical and International Overview”, *Proceedings of the Royal College of Physicians of Edinburgh*, 31 (2001), pp. 39-41.

<sup>788</sup> Davis S.R., Dinatale I, Rivera Wall L and Davison S., “Postmenopausal Hormone Therapy: From Monkey Glands to Transdermal Patches”, *Journal of Endocrinology*, 185 (2005), pp. 207-222.

<sup>789</sup> David Healy, “Psychopharmacology and the government of the self”, *Colloquium at the Centre for Addiction and Mental Health, Nature Medicine*, 2000.

future, significant financial outlay and willingness to extend the accepted boundaries of current practice – are the key elements in the development of proposed future transhumanist biomedical technologies.<sup>790</sup> I would argue therefore that Sanger, McCormick and Pincus saw the potential of the contraceptive pill as what might be considered in contemporary terms to be a transhumanist technology, and that they therefore planned and funded its development in an intentional way.

By contrast, as I showed in Chapter 4, SSRI antidepressants were the product of a much more institutionalised and mature drug development process in the 1970s and 1980s. Prozac was marketed primarily as a therapeutic advance for the treatment of depression and it was only after its launch, perhaps due to Lilly's ingenious and holistic marketing campaign, that Peter Kramer and others saw the potential of Prozac and the SSRI antidepressants to transform society on a large scale, due to their subtle effects on personality.

However, are these past therapeutic developments transhumanist in terms of the objective criteria defined in Chapter 2 of this thesis? In terms of the general criteria for a transhumanist development, they are. Both past therapeutic developments are technologies, in the broadest sense – a material means to effect a process – and they exert their effects on and through the human body to achieve a largely positive effect on human flourishing. This is unsurprising given that, as already mentioned, these general criteria are derived from the transhumanism literature. Therefore, they reflect the technological and ideological breadth of the transhumanist movement, and consequently are very general in their nature.

The ability to apply a biomedical technology to the human body with unbridled autonomy is a key tenet of the transhumanist movement, as discussed in Chapter 2. Consequently, whether a biomedical technology can be applied and used autonomously would be a significant factor in the classification of any biomedical technology as “transhumanist”. However, I have found that the role

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<sup>790</sup> See the discussion of the aims and features of transhumanism in More, “Philosophy of Transhumanism”, pp. 1-8.

of autonomy in the use and application of biomedical technologies – past and future – is rather more ambiguous than transhumanist scholars admit to. In Chapter 2, I defined autonomy as self-determination in personal decision-making, so that the person can act as a moral agent, with minimum interference of external factors. I have shown in the previous three chapters that all the technologies discussed in this thesis – medical technologies from the past, the contraceptive pill and SSRI antidepressants, and the proposed transhumanist technologies of the future – may be applied with autonomy at the outset, but that there may be loss of autonomy due to unintended consequences at a later stage of their use. These unintended consequences may be due to external factors – coercion at an individual level and social pressure and, in the case of SSRI antidepressants, possibly the effects of the drugs themselves (the dependence and withdrawal effects, or diminished responsibility due to atypical reactions).

Application of the specific theological criteria of Messer and Graham to the case studies in Chapters 3 and 4 highlight some of the theological and ethical concerns about radical biomedical technologies. Concerning Neil Messer's criteria, the contraceptive pill and SSRI antidepressants have benefits for the poor, although the evidence for this is sparse at present for SSRI antidepressants, and there may be issues with accessibility to the contraceptive pill in some parts of the world. However, comparing the costs of these drugs with the likely costs of radical future biomedical technologies at an early stage of commercialisation, current drug therapies are more universally available and more equitably distributed than some potential future technologies are likely to be. Consequently, these two areas of therapeutics are good news for the poor, in comparison with some of the proposed future proposed transhumanist technologies.

The contraceptive pill and SSRI antidepressants both have the potential to change human life and flourishing in a way that aligns with a positive and comprehensive view of the *imago Dei*. The effects of SSRI antidepressants are not just focused on human attributes but contribute to human flourishing in a way that is also consistent with other approaches to the *imago Dei*. The contraceptive pill has the potential to affect society in a way that addresses

gender imbalances, and which therefore reflects a less androcentric view of the *imago Dei*. In these respects, these drugs are not like future transhumanist technologies. However, these drugs might be said to be like future transhumanist technologies in that they can be used to enable the individual or practitioner to “be like God” and “play God” in manipulating fertility or personality at will.

Both the contraceptive pill and SSRI antidepressants exert positive effects of human flourishing and experience in and through the human body (SSRI antidepressants have a positive effect on bodily life as well as mental life). In this respect, these drugs are decisively unlike some proposed future transhumanist technologies, such as mind uploading and cybernetics, which have a negative view of bodily human life, and which deprecate the role of the human body in human life and flourishing.

There is evidence that both drugs have, during their history, been regarded by some commentators as triumphs of scientific medicine and panaceas for social problems, suggesting an over-confidence in their effectiveness and use in human society, which might be seen as technological hubris. In this respect, these drugs resemble to some extent more radical future transhumanist developments, which are often treated as radical solutions to profound human problems.<sup>791</sup>

In terms of Elaine Graham’s criteria, both the contraceptive pill and SSRI antidepressants have objective benefits for human society corporately, due to changed cultural expectations, as well as benefits for the health, wellbeing and subjective experience of the individual. In this respect, these drugs are distinct from many of the proposed, future transhumanist technologies, which assume an individualistic, privatised approach to technology use, rather than one where medical technology is deployed according to public policy for the good of society.

In conclusion, both these previous therapies have shown some – but not all - of the features of proposed future transhumanist technologies. As pharmaceutical

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<sup>791</sup> McNamee and Edwards, “Transhumanism”, pp. 513-518.

medicines, these therapeutic developments work in and through the human body to exert a positive effect on human life and experience, and so they work on the assumption that the human body is a necessary prerequisite to human life and experience, unlike some proposed future technologies such as mind-uploading and cybernetic hybridisation.

However, as noted in Chapter 2, transhumanism uses biomedical technology to go beyond modernity's project of transforming the world through culture and education. Consequently, as medical technologies available globally, the contraceptive pill and SSRI antidepressants do resemble future transhumanist biomedical technologies inasmuch as they have the potential to change society primarily by a biomedical means. Medical technologies are often seen as a panacea for all sorts of social problems.<sup>792</sup> This has been noted with previous pharmaceutical technologies in Chapters 3 and 4 and has been raised as a potential issue with proposed future transhumanist technologies in Chapter 2. The reality, however, is that, while future biomedical technologies may well have a widespread impact on human society, and hopefully a positive one, they cannot solve all of society's problems – and the problems they will solve will be determined by safeguards around how they are developed, and policies about how they will be funded and distributed.

Many of the transhumanist thinkers, such as Nick Bostrom and Max More, have described proposed transhumanist technologies in general terms, and have suggested what impact they might have on future human life. However, they have not envisaged in any detail how these technologies might be developed scientifically and made available to human society. The two case studies here, the contraceptive pill and SSRI antidepressants, indicate that the radical biotechnologies of the future, with profound effects across the human population, will emerge from current medical technology research and probably

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<sup>792</sup> McNamee and Edwards, "Transhumanism", pp. 513-518; see also Ronald Cole-Turner, "Towards a Theology for the Age of Biotechnology", in *Beyond Cloning: Religion and the Remaking of Humanity*, edited by Ronald Cole-Turner, (Harrisburg PA: Trinity Press International, 2001), p. 137.

be enabled by various scientific, organisational, commercial and socio-political factors.

5.5. Question 3: What were the ethical concerns with past therapeutic developments? Have these ethical concerns been warranted in the light of subsequent experience?

As described in Chapter 1, large numbers of new medicines were developed during the therapeutic revolution years of the twentieth century. Indeed, so many were developed that the case studies for this thesis had to be carefully chosen as ones which had generated the most theological and ethical discussion on their effect on human life. Many medicines developed at that time – for example, antibiotics, salbutamol for asthma and cardiovascular medicines, such as beta blockers – have had profound effects on medical outcomes, human health and wellbeing, and yet Christian ethics has largely been silent about their innovation and use. The notable exceptions to this relative lack of engagement of Christian ethics with pharmaceutical medicine has been the Roman Catholic church's official opposition to the contraceptive pill on natural law grounds, and a similar response by Roman Catholic scholar, John-Mark Miravalle, to the "Prozac phenomenon" following the introduction of SSRI antidepressants.

The interesting aspect of this is that, logically, a natural law objection could be raised for the use of *any* non-natural, "artificial" medical intervention of human devising, be it a drug or a surgical procedure. However, the Roman Catholic Church has only chosen to develop and express this argument against those medicines that have significant non-medical and social implications, hence their concerns with the contraceptive pill and SSRI antidepressants. Nevertheless, despite the robust articulation of the natural law position on contraception by the Roman Catholic church in *Casti Conubii* in 1930 and again in *Humanae Vitae* in 1968, the evidence indicates that many Roman Catholic couples are ignoring the teaching of their church and using forms of hormonal contraception for

purely pragmatic reasons of fertility control and family planning in a developed, modern, industrial/post-industrial society.<sup>793</sup>

Both the medical technologies described in the case studies of this thesis – the contraceptive pill and SSRI antidepressants – have been controversial in western society at, or since, their introduction. The adoption of the contraceptive pill took place slowly, due to the relative conservatism of society in America and Britain in the early 1960s, compared to the current time. The adoption of Prozac and the SSRI antidepressants was more rapid, possibly due to the recognised therapeutic need for these drugs in the clinical treatment of depression, as alternatives to older agents, and also the more mature stage that both the therapeutic revolution and the drug discovery process had reached by the late 1980s.

With the introduction of the contraceptive pill in 1960, and its increasing use in the United States, opponents claimed that use of the pill would lead to eugenic population control, a breakdown of marriage as an institution and as a social good, increased sexual activity with multiple partners and the subversion of relationships.<sup>794</sup> Similarly, concerns were expressed about SSRI antidepressants after their launch – at first, these were medical concerns about adverse effects such as alerting reactions, withdrawal effects and suicidal ideation, and then subsequently, there were philosophical, social and theological concerns about the wider societal implications of SSRI “enhancement” following the publication of Peter Kramer’s *Listening to Prozac*. Both the contraceptive pill and SSRI antidepressants had a cultural impact on society at, or after, their introduction. The contraceptive pill was associated in the popular imagination with the sexual revolution, and SSRI antidepressants with the growth of the “better than well” Prozac phenomenon. Yet, for both agents, use has become normative and they have been largely assimilated into twenty-first century culture. Indeed, neither agent now is dominant in its area of pharmacology, in the way it once was. Long-acting contraceptive implants are

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<sup>793</sup> Christopher Langford, *Birth Control Practice and Marital Fertility in Great Britain* (London: London School of Economics, 1976), pp. 26-34, 51.

<sup>794</sup> May. *America and the Pill*, pp. 37, 57, 71.



now an important alternative to oral contraception, and cognitive behavioural therapy (CBT) is an important alternative treatment to SSRI antidepressants in many patients with depression.

Many of the medical and social concerns about both the contraceptive pill and SSRI antidepressants have been found to be unwarranted, based on the experience of use that has accumulated since their launch. First, by and large, the pill has not been used by governments to exert eugenic population control, largely because it needs to be taken voluntarily by the user.<sup>795</sup> This argument has, however, been levelled, and with good reason, at the way injectable forms of hormonal contraception – for example, injectable and implantable progestogen products – have been distributed in developing countries, and within some sections of society in first world countries (for example, women with mental disabilities).<sup>796</sup> Indeed, it has been suggested that oral contraceptive products have, in the past, been distributed in some developing countries in an imperialistic and patronising manner by agencies funded by governments of affluent western society states, in a manner that could be considered coercive.<sup>797</sup> Consequently, although the concerns about the use of the contraceptive pill for eugenics and population control have not been warranted during the history of its use, concerns of this nature should not be ignored with future technologies, given the importance of autonomy in the use of biomedical technologies, as argued earlier in this chapter.

Second, contrary to the fears of some commentators who were opposed to the contraceptive pill at its launch, marriage remains an important social feature in western society, and there is no direct evidence that hormonal contraception alone has had an appreciable impact on population trends in marriage.

Following the introduction of the pill in Britain in 1961, the number of people

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<sup>795</sup> With the notable exception of the China “one child” policy. This was largely enforced by incentivising use of contraception although, in the 1980s, more draconian measures, such as forced sterilization and abortion, were implemented.

<sup>796</sup> Betsy Hartmann, *Reproductive Rights and Wrongs: The Global Politics of Population Control*. (Boston: South End Press, 1995), p. 202.

<sup>797</sup> Hartmann, *Reproductive Rights and Wrongs*, p. 189.

getting married each year in Britain continued to rise until 1970.<sup>798</sup> Although there was a decline in the number of marriages taking place in Britain between 1972 and 2009, population research has suggested that this was due to people delaying marriage and, while the number of couples cohabiting increased during this time, in many cases this was a precursor to marriage.<sup>799</sup> Moreover, between 2009 and 2012, the number of marriages in Britain actually increased, most likely due to factors unrelated to contraception.<sup>800</sup>

Third, despite the obvious expectation of an increase in commitment-free sex following introduction of the contraceptive pill, there is scant evidence that the availability of hormonal contraception alone has led to an increase in sexual activity with multiple partners in society.<sup>801</sup> Indeed, in her commentary on the history of contraception, Cook argues that sex is legitimised by love, and quotes Helen Brook, founder of the Brook Advisory Service, who said that “if you are promiscuous, there is a reason for it. Promiscuity is a symptom of something else.”<sup>802</sup> Furthermore, the social history of contraception in the middle decades of the twentieth century indicates that, despite popular perception, there is no clear link between the development of the pill and the beginning of the so-called sexual revolution, even though the pill has had an impact on popular culture.

However, as argued in Chapter 3, the ability to control conception and to limit family size have the potential to reinforce moral agency and responsibility on

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<sup>798</sup> Neil Tranter, *British Population in the 20th Century* (Basingstoke: MacMillan, 1996), pp. 93-95.

<sup>799</sup> McLaren, Elizabeth. "Marriages in England and Wales (Provisional), 2012", 2013, [https://webarchive.nationalarchives.gov.uk/20160107154955/http://www.ons.gov.uk/ons/dcp171778\\_366530.pdf](https://webarchive.nationalarchives.gov.uk/20160107154955/http://www.ons.gov.uk/ons/dcp171778_366530.pdf). (accessed August 2015).

<sup>800</sup> See McLaren, “Marriages in England and Wales”. The causative factors for the increase in marriages since 2009 are thought to be a) the increased number of people getting married abroad, abolition of the Certificate of Approval Scheme, enabling easier marriage for those subject to immigration controls, increasing numbers of people marrying after a period of cohabitation, and marriages taking place which were delayed after the 2008/2009 financial downturn.

<sup>801</sup> Stephen Black and Mary Sykes, “Promiscuity and oral contraception: The relationship examined”, *Social Science and Medicine* 5 (1971), pp. 637-643.

<sup>802</sup> Hera Cook, *The Long Sexual Revolution: English Women, Sex and Contraception, 1800-1975* (Oxford: Oxford University Press, 2004), p. 278.

the part of would-be parents. Moreover, planned parenthood, the potential outcome of effective contraception, is an ethical good, as it has the potential to promote marital stability through the health and wellbeing of both partners.<sup>803</sup>

Similarly, with the Prozac phenomenon, following the publication of Peter Kramer's *Listening to Prozac*, detractors envisaged the use of Prozac and other SSRI antidepressants for dystopian mind control, in a way which might have far-reaching implications for both human society and for medical ethics.<sup>804</sup> Yet these concerns have proved unfounded too. Despite protocol-based use of SSRI antidepressants in large populations by US health maintenance organisations (HMOs), for reasons of financial cost-effectiveness, there is no evidence that there have ever been any organised programmes of social control using these drugs. Furthermore, fears concerning the adverse social effects of these drugs are not matters of immediate concern for individuals being treated with SSRI antidepressants, whose first priority is an effective clinical treatment for depressive illness. And, indeed, as argued in Chapter 4, many people receive treatment with SSRI antidepressants and enjoy significant benefits of that treatment, in terms of alleviation of depression and improved welfare as a result.

With their concerns about the use of both the contraceptive pill and SSRI antidepressants, the Roman Catholic church has applied natural law objections only to those medical interventions that have a social implication, or where conflicts with the church's doctrine are anticipated. I would argue that the Roman Catholic church's ethical treatment of therapeutics has therefore been selective, and that it has not applied the same natural law theory to all biomedical developments, as logic would dictate. Yet, in both these therapeutic cases where natural law objections have been applied by the church, social

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<sup>803</sup> Bernard Häring, "New dimensions of responsible parenthood", *Theological Studies*, 37 (1976), pp. 120-132.

<sup>804</sup> See, for example, Carl Elliott, "Pursued by happiness and beaten senseless: Prozac and the American dream", *Hastings Center Reports*, 30 (2000), pp. 7-12.

concerns relating to the therapies have largely not been warranted, but also the positive ethical benefits of these therapies have often not been acknowledged.

As already argued at length, natural law is deficient on its own as a tool for ethical evaluation of biomedical technologies. It is not surprising therefore that, as discussed in Chapter 1, modern secular bioethics has drawn heavily on consequential ethical thought, in dealing with therapy assessment and health resource allocation and distribution.<sup>805</sup> Yet this approach too is potentially problematic from a Christian perspective, due to perceptions of human good, difficulties with calculating the quantum of good in different situations and the possibility of conflict of consequentialism with Christian duty.<sup>806</sup> As discussed earlier in this chapter, an approach to biomedical decision-making based on virtue – the virtue of the actors (technology users and healthcare practitioners), rather than the nature of the technologies or the consequences of their use – has considerable potential for future ethical evaluation of biomedical technologies because it aligns with the New Testament concept of the fruits of the Spirit (Galatians 5).

As discussed in Chapters 2 and 3, the transhumanist writer Ronald Bailey, has argued – reasonably – that the application of biomedical technology does not preclude virtue on the part of the human actors in the scenario in question.<sup>807</sup> Similarly, I would argue that the virtues of marital love and commitment are not necessarily diminished by the routine use of the contraceptive pill and that use of the pill does not have a bearing on the moral quality of a marriage or parental relationship. By contrast, the methodology of the Roman Catholic Church's natural law argument against the contraceptive pill, as expressed in *Humanae Vitae*, does seem to devalue the quality of a marriage, as noted by Oliver O'Donovan in his criticism of the atomistic approach of the Roman Catholic stance on contraception, with its focus on individual sex acts.<sup>808</sup> Similarly, the

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<sup>805</sup> John Bryant, Linda Baggott la Velle and John Searle, *Introduction to Bioethics*, (Chichester: Wiley, 2005), p. 23.

<sup>806</sup> Neil Messer, *SCM Study Guide: Christian Ethics*, (London: SCM, 2006), p. 80.

<sup>807</sup> Bailey, "For Enhancing People", pp. 331-332.

<sup>808</sup> O'Donovan, *Begotten or Made*, p. 77.

use of SSRI antidepressants per se to alter mood or personality attributes does not necessarily preclude virtuous actions on the part of the user. Nevertheless, it is possible for both these - and other biomedical technologies - to be deployed, applied and used in a non-virtuous way.

#### 5.6. Question 4: How do issues identified with previous medical technologies inform the ethical evaluation of future technologies?

Kahane and Savulescu are right to make the connection between the use of currently available medicines - for example, the SSRI antidepressant, citalopram (for enhancement, rather than treatment) - and potentially more radical, future transhumanist technologies.<sup>809</sup> They make the point that both current medicines and future biomedical technologies may be used for human enhancement, and they indicate that the ethical issues will be similar in both cases. Furthermore, they contend that the subtle enhancements that are already available (for example, the use of citalopram to attempt moral enhancement) are as significant ethically as more radical enhancements which may become available in the future. This is reasonable, as the use of current medical technologies provide ethical models for the use of future medical technologies, even though their effects might be modest compared with more radical future transhumanist enhancement technologies. However, Kahane and Savulescu make the incorrect assumption, in my view, that because an ethical issue has already been identified and discounted with a current therapy, it is therefore of no significance and may be discounted in any future evaluation of biomedical technologies. Ethical issues are fundamentally concerned with what is a good way of living human life, rather than just the effects of the novel application of technology. There is therefore no reason to suppose that the same ethical issues will not arise in human society at any point in history, irrespective of what technologies are being deployed. Furthermore, possible new ethical issues, arising from unintended consequences of new biomedical technologies, cannot be discounted. This section will look at how the ethical

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<sup>809</sup> Guy Kahane and Julian Savulescu, "Normal Human Variation: Refocussing the Enhancement Debate", *Bioethics*, 29 (2015), pp. 133-143.

issues from past therapies, described in the case studies in this thesis, might influence and inform the ethical evaluation of future biomedical technologies.

I contend that some of the good ethical ends offered by transhumanist technologies – longevity, better biological function and improved quality of life – have, at least in part, already been achieved with pharmaceutical medicine, during the therapeutic revolution years of the twentieth century. This would include, for example, the impact of specific cardiovascular medicines, such as beta blockers and ACE inhibitors (see Chapter 1), cancer chemotherapies and biological agents for autoimmune disorders. However, many previous developments in pharmaceutical medicine during the therapeutic revolution years have not directly addressed the enhancement of human capacities. This is mainly because they have been developed by the pharmaceutical industry in the context of medicine and therapy. Nevertheless, some – for example, the two case studies presented in this thesis - have been far-reaching in their influence, and have transformed society, as well as individual lives. Perhaps because of the contribution of the modern research-based pharmaceutical industry to human health and wellbeing, the overall benefits of pharmaceutical medicine are rarely questioned in mainstream western society, despite periodic criticism of the selective, capital-driven efforts of the industry by members of the medical profession and the press.<sup>810</sup>

On the contrary, however, in popular culture, future transhumanist technologies are frequently regarded with suspicion, and those who advocate them are accused of “playing God”. There may be several reasons for this. Firstly, as discussed in Chapter 2, proposed future transhumanist technologies are often enhancements (to enhance human function, rather than to treat disease) and are described as enhancements, rather than therapy. The development and introduction of such technologies is therefore not associated with medicine or healing, or discussed in the context of healthcare, in the way that medical technology has been to date. This is significant because, as discussed in

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<sup>810</sup> See discussion in Ken Holland, “The Pharmaceutical Industry: the True Perspective”, *Pharmaceutical Historian*, 22 (1992), pp 10-11.

Chapter 2, the use of therapy to alleviate suffering has a perceived moral and emotional imperative, and there is arguably a duty on the part of the state's healthcare system to provide such therapies. However, the use of enhancements in a healthy person are not associated with the same moral imperative, or perceived obligation of state provision. Consequently, the use of medical technologies for enhancement is not only ethically distinct from their use for therapy, but their use "feels" different culturally, and therefore is treated differently in popular discourse.

Secondly, because they are "enhancements", transhumanist technologies may appear to be "unnatural" in the context of current culture and the current evolutionary stage of humanity. Given that natural law arguments have been prominent in the past in Christian ethical assessments of reproductive technologies in general terms, and that the Roman Catholic church's opposition to hormonal contraception in particular is well-known, both within the church and beyond it, this has heightened cultural suspicion about radical biomedical technologies. However, as previously stated, as the use of radical and invasive biomedical technology increases in society, the ethical significance of whether a technology is "natural" or not correspondingly diminishes.

This is particularly relevant in the field of cybernetics. At present, artificial prostheses of different types – artificial hip or knee joints, cardiac pacemakers or vascular stents – are routinely implanted into the human body, as part of various medical treatments, and they present no major ethical concerns for users about how "natural" they are. Widespread use of more extensive cybernetics – for example, robotic organs or limbs – and indeed the development of the cyborg (composite human body and machine) – are extensions of these current medical interventions and may well be adopted in a gradual manner. When such biomedical technology interventions are more commonplace, other ethical issues come to the fore, and whether the technology is "natural" becomes of lesser relevance.

Nevertheless, the importance of social context in medical science should not be at the expense of realism in the task and objectives of science. Critical realism is an established epistemological point of contact between science and religion

in general,<sup>811</sup> and the concept of critical realism is important to understand the truth claims of science. Critical realism recognises that science is useful because it describes a real world, rather than an ideal one (i.e. it is not entirely a social or intellectual construct) but that social and cultural factors do have a bearing on scientific discoveries, scientific communications and the activities of the scientific community.<sup>812</sup> I have shown that this is the case for both the contraceptive pill and SSRI antidepressants, by demonstrating how the scientific discovery and the cultural reception of these products both arose from the historical context of their development. In contrast, as discussed in Chapter 2, the transhumanist writer, Donna Haraway analyses scientific studies of human behaviour and contends that natural science is a purely a social construct, with the ideological agenda of imposing the views of a male scientific patriarchy onto wider liberal society.<sup>813</sup>

However, the fact that pharmacology has had objective and measurable benefits to human beings across society in a widespread manner, as shown in the two case studies, demonstrates that biomedical science cannot be simply dismissed as a social construct, and that this critical realism is important for countering any science-religion dualism which might still arise in some parts of the Christian world. Just as science is primarily about developing and testing theories about the real, natural world, rather than developing and reinforcing a social construct, so therapeutics is primarily concerned with the alleviation of real disease and humanitarian need and the promotion of genuine human wholeness. Science is not a tool for reinforcing certain ideologies in human life, such as a liberal modern view of autonomy and human will.

Scientific reality is more likely to be confounded by social constructionism when considering the social impact of technologies than when considering the effects

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<sup>811</sup> Christopher Southgate, *God, Humanity and The Cosmos*, 3<sup>rd</sup> Edition (London: T and T Clark, 2011), pp. 15-19; Alister McGrath, *The Science of God: An Introduction to Scientific Theology* (London: T and T Clark, 2004), pp. 139-153.

<sup>812</sup> McGrath, *The Science of God*, pp. 139-152.

<sup>813</sup> Donna Haraway, *Simians, Cyborgs and Women: The Reinvention of Nature*, (New York: Routledge, 1991), p. 8.



on the individual human person. This is why the evaluation of future transhumanist biomedical technologies – both medical and ethical - should be evidence-based, according to objective verifiable criteria, using similar methodologies to those that pharmacology has developed over the last fifty years, during the therapeutic revolution years.

Thirdly, even the transhumanist technologies that are currently technically feasible – such as cryogenic preservation of the body and cybernetic enhancements – are still very much in their infancy and at a prototype stage. These technologies are therefore expensive, and not in widespread use, as they are the preserve of only the wealthiest people in society. For this reason, the use of these technologies can be perceived as discriminatory and only of benefit to some (wealthy) individuals. However, similar arguments could be made for any medical technology at an early stage of its development, commercialisation and adoption in western health economies where the availability of medical technology is restricted and regulated. New medicines are rightly subject to rigorous regulatory controls in developed countries, and all new medicines will undergo clinical trials in a limited number of people and be subject to scientific – and sometimes media – scrutiny. Some of these issues relating to the introduction of a new medical technology are illustrated in the development of the contraceptive pill and opposition to its use at the outset, as described in Chapter 3.

Nevertheless, this cultural suspicion means that transhumanist technologies are not generally regarded as therapies - agents of healing. Consequently, as part of an ethical evaluation of these transhumanist technologies, it may be helpful to exercise a countercultural approach and try to think of them as therapies, rather than enhancements. As discussed in Chapter 2, the boundary between a therapy and an enhancement is indistinct, and similar ethical arguments concerning virtue could be applied to enhancements, as well as therapies. I have shown that the contraceptive pill is an enhancement in terms of its effects on fertility, and largely fits the objective criteria for a transhumanist biomedical technology, according to Messer and Graham. Yet, the contraceptive pill may also be used therapeutically, as a treatment for menstrual disorders, often at the same time as it is being used for its (enhancing) contraceptive properties. SSRI

antidepressants were developed as a treatment for clinical depression, but subsequently were used by some people as a cosmetic psychopharmacology enhancement to make them feel “better than well”.

Brent Waters has argued that medical care is not simply concerned with avoiding (inevitable) mortality, but about exercising human virtues, such as compassion and kindness in the relief of human suffering.<sup>814</sup> In fact, the same arguments could be made of transhumanist enhancements. These, too, should be about exercising human virtues in the alleviation of human suffering, rather than simply avoiding finitude.

It is often supposed that immortality is the “final solution” to all the problems of human life. However, in Chapter 2, I discussed several issues which might be problematic in the event of increased longevity in human society, conferred by widespread use of transhumanist technologies – for example, the impact on marriage, future working patterns and effects on the economy. These could all lead to new hitherto unencountered ethical dilemmas. These would include various economic and environmental issues arising from a considerable extended human lifespan. Simply overcoming human finitude with transhumanist technologies – even if it was possible - would not obviate every ethical dilemma that human beings face; rather it would prolong them and introduce new issues. Two factors central to the ethical acceptability of new transhumanist technologies will be a virtuous motivation on the part of the innovators and a willingness of the part of medicine and society to continually monitor the societal benefits and risks of the technology for human flourishing and wellbeing. A crude Promethean desire for immortality and super-human attributes will be no substitute for an ongoing ethical discourse in society about the role and desirability of such technologies.

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<sup>814</sup> Brent Waters, “Saving Us from Ourselves: Christology, Anthropology and the Seduction of Posthuman Medicine”, in *Future Perfect? God, Medicine and Human Identity*, edited by Celia Deane-Drummond and Peter Manley Scott (London: T and T Clark International, 2006) pp. 194-195.

With therapeutic developments to date that have a potential social impact – for example, the two case studies presented in this thesis – the Roman Catholic church has based its ethical objections on natural law theory. Yet, as I have shown, the subsequent experience of the development and use of these medicines suggests that various other ethical factors that are not based on nature come into play when these medicines are used – for example, the benefits of virtuous use of the medicine, and the problems of just distribution of the medicine.

Consequently, as I have argued in this chapter, use of the natural law approach alone, or even predominantly, in the assessment of therapeutics is a naïve way of assessing therapeutics, and a more varied ethical methodology is needed for the assessment of therapeutics now and in the future. Such an approach would account for factors such as the motivations of the user, the consequences of use of the technology, and the fair use of technology in society, rather than only the nature of the technology. This kind of varied ethical approach is urgently needed prior to the widespread availability of radical transhumanist technologies in the future. Using the theological criteria of Messer and Graham, I have shown here that a future ethical assessment of medical technologies from a specifically Christian perspective would need to examine the impact of the technology on autonomy, embodiment and on the *imago Dei*, as well as on nature.

Just as natural law alone is an inadequate ethical approach to the evaluation of potentially radical transhumanist biomedical technologies, extreme conservatism concerning the adoption of biomedical technology (what Carl Elliott terms bio-conservatism, or “pharmacological Calvinism”<sup>815</sup>) is an inadequate cultural response to these technologies. This is for three reasons. First, regardless of their enhancement potential, some transhumanist technologies also have considerable therapeutic potential for humanity, arguably far greater and more widespread potential than therapeutic developments to date. These might include, for example, the development of sophisticated cybernetic internal

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<sup>815</sup> Elliott, “Pursued by happiness and beaten senseless”, pp. 7-12.

organs for transplant purposes, or the use of nanoparticles in the bloodstream to deal with the biochemical effects of blood disorders.

With all healthcare technologies, from the hygiene provisions of the nineteenth century - which might not be considered “medical interventions” by today’s standards - to the specific pharmacological developments of the twentieth century, the relief of human suffering and improvement of human welfare has been a key objective, and a major motivation for research and progress. There is no reason why the same cultural approach cannot be adopted with future transhumanist technology developments in the twenty-first century. However, governments and research agencies would need to be proactive and intentional in identifying the policies to enable this. The role of public policy in the equitable adoption and distribution of biomedical enhancement technologies has been referred to in Chapter 2 and, as discussed earlier in this chapter, public health policy could be used to define acceptable minimum levels for human function, which enhancement technologies could support.

Second, because of the goodness of creation as affirmed in Christian theology - and the provisional goodness of natural science as a means of exploring creation - Christian critics of transhumanism can be reassured that, for all the potential benefits of biomedical technologies on human flourishing, the eschatology of transhumanism cannot ultimately deal with the problem of sin and the real need for human moral responsibility. As argued earlier, the effects of transhumanist biomedical technologies on autonomy are debatable, and they do not circumvent the ethical issues associated with good human life, which are only rendered more complicated by immortality or extreme longevity, due to the extended period over which the person – in whatever morphological form – must exercise moral agency. While transhumanist enhancements may bring benefits in terms of human function and longevity, they cannot be a panacea for all human ills, and many of the prevailing moral aspects of human life - for example, the development of moral agency, responsibility for sin, living well in community and making good moral decisions in the face of new challenges - are unlikely to be affected by adoption of more radical biomedical technologies. Consequently, I would argue that the fears of strict bio-conservatives are unwarranted and should be considered in the context of the hope of the

potential benefits of biomedical enhancement technologies on health and wellbeing.

Third, strict bio-conservatism does not do justice to the theological notion of the “created co-creator” defined by Philip Hefner, as introduced in Chapter 2 and discussed earlier in this chapter. This is the idea that human beings are created by God, and yet they also exercise a creative role with him, in science and culture.<sup>816</sup> As far as the created co-creator role of humanity in the development of biomedical technologies is concerned, Hefner’s qualification is important. Hefner states that the human destiny embraced must be “wholesome to the nature that birthed it.”<sup>817</sup> In other words, the future creation – or re-creation - of humanity, by either cultural or scientific means, should be good, in a way that is consistent with the original creation. So, while “human nature”, in a strictly biological sense, is debatable, this consistency between origin and maturity should also be concerned with the virtues that humans have always aspired to, which have long been regarded as goods of human society, and which are still desirable in a future society where there are transformative medical technologies. Such virtues would include compassion and kindness in the alleviation of suffering (as envisaged by Waters),<sup>818</sup> self-restraint, generosity and neighbourly love.

The cultural implications of Hefner’s theology of co-creation present an ethical dimension, and this provides a context for the church to ask important questions. For example, how can the fruits of the Spirit (Galatians 5v22-26) in human actions and personalities be experienced in a context where humans can be radically re-created by biomedical technology? How can wholeness, relationality and hope be expressed in a technological context? Strict bio-conservatism not only shuts out the potential for exploration of the therapeutic benefits of transhumanist biomedical technologies, it prevents any discourse on the potential benefits of such technologies on human flourishing, from a Christian perspective.

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<sup>816</sup> Hefner, *The Human Factor*, p. 27.

<sup>817</sup> Hefner, *The Human Factor*, p. 27.

<sup>818</sup> Waters, “Saving Us from Ourselves”, pp. 194-195.

I contend that this space in public discourse for ethical evaluation of biomedical technologies is important and is compatible with a Christian view of the world. The exact nature of the human being has, in fact, always been open to debate, both in theology, with the different approaches to the *imago Dei*, as discussed in Chapter 2, and in science, with the impact of new animal behavioural studies on understandings of the distinctiveness of humanity.<sup>819</sup> While the popular perception is that adoption of transhumanist biomedical technologies will result primarily in hitherto unexpected ethical issues, in fact many recognised ethical questions in society at present – for example, the issue of how husband and wife relate in marriage – will still be present in a technological age, and these questions will not necessarily be affected by invasive biomedical technology, as argued previously in this chapter. Indeed, this issue has already been experienced with the contraceptive pill, as discussed Chapter 3; the effect of the pill on conception does not obviate the need for ethical reflection of how a man and woman should relate to each other in marriage.

As mentioned, some critics of potential transhumanist technologies will point to the possible unintended consequences of radical biomedical technology. However, as discussed in Chapter 1, the history of pharmacology - for example, the serendipity of the drug discovery process, and the idiosyncratic nature of the adverse events underlying some major drug safety issues (for example, the thalidomide disaster) - shows that there have always been unintended consequences with medical developments. The possibility of unintended consequences has never been an absolute reason not to proceed with a biomedical development scientifically, nor should it be an absolute reason not to proceed ethically.

It is these unintended consequences that limit the usefulness of a consequentialist ethical approach in medical ethics, as much as natural law ethical approaches may be limited in a world where nature is technologically malleable. It is understandable that the emphasis of the Hippocratic Oath, developed at a time when there was no modern, scientific understanding of

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<sup>819</sup> Van Huyssteen, *Alone in the World?* pp. 139-143.

medicine, was on the actions and motivations of the practitioner, because this was the one aspect of medicine that the ancient thinkers could understand, and that the practitioner could control.

The unpredictability of the human biological response applies equally to previously developed medicines of the therapeutic revolution era and to proposed future transhumanist biomedical technologies. In both cases, although the unintended consequences of these biotechnological interventions are unavoidable, they call for humility and a respect for the mysteries of the natural world, as discussed in relation to Neil Messer's criterion of attitude to past failures in the previous three chapters. This humility and respect should be exercised by the healthcare practitioner and, in a world of person-centred care and consumerist use of health technologies, ultimately by the person who is applying the technology to their own body.

The mechanisation of medicine with technology, and the evaluative process that surrounds it, has rendered the healthcare practitioner a functionary rather than a healer, and medicine as a form of engineering rather than an art. I would argue then that, while natural law and consequentialist ethical theory are inherently limited as ethical tools for the evaluation of biomedical interventions, the virtues and motivations of the practitioner should still have a significant role in medical ethics and will need to be of greater significance still as more radical medical technologies become available.

As I have shown earlier in this chapter, four specific ethical domains – autonomy, nature, embodiment and the *imago Dei* - provide a framework for a fruitful discussion of the ethical issues surrounding two areas of drug development from the therapeutic revolution years of the twentieth century, namely the contraceptive pill and SSRI antidepressants, the two case studies presented in Chapter 3 and Chapter 4 respectively. Furthermore, as argued earlier in this chapter, both the therapeutic interventions described in these case studies had effects on the human body that were radical for their time and had far-reaching consequences for society in general, not just for the individual. Indeed, both these therapeutic interventions could be considered as

“enhancements” for an otherwise healthy person, rather than just medical treatment of an illness or disorder.

I would therefore recommend that any future transhumanist technologies are evaluated according to these four ethical domains. These four areas constitute common ground between Christian ethical assessment of past therapies and the process of ethical evaluation of future transhumanist technologies. Indeed, a proactive approach would be to consider carefully these ethical domains during the process of developing and implementing new biomedical technologies which might have far-reaching effects on human life, flourishing and experience.

### 5.7. Refining the Theological Criteria

In this final section of the chapter, I explore how the theological ethical criteria of Neil Messer and Elaine Graham might be modified in the light of this discussion of past therapeutics to give them more diagnostic power when evaluating future biomedical technology. These refinements will take into account some of the “clinical” aspects of use and evaluation of the technologies, and also the principles of integrity and totality – that ethical decisions must be made for the benefit of the whole person and indeed the whole community, rather than ruling out any ethical benefits, due to the use of a prescriptive ethical methodology for assessment of the technology.

There are various possible refinements to Messer’s four diagnostic questions, as far as radical transhumanist biomedical technologies are concerned. Whether the transhumanist technology is good news for the poor will depend on how scalable the technology is, and therefore how quickly it can be made universally available at an affordable cost for as many people as possible. A related issue is that there should be no barriers to equitable access to the technology in different countries and cultures for any reasons other than cost. A further factor concerning whether an enhancement technology is good news for the poor is the extent to which governments might subsidise it in the interests of equity of access. The question therefore might be rephrased: is the technology good news for the poor, the marginalised and for equitable distribution of regional, national or international public funding?



In terms of the second question about the *imago Dei*, it is to be hoped that applications of future transhumanist technology would enable people to fully conform to the image of God, rather than being an attempt to be “like God”. It would not be permissible from a Christian perspective for a technology to actively enable a person to remodel their body and mind according to their will or whim, in their own image (*imago hominis*). Furthermore, the enhanced person should reflect the *imago Dei* in all its dimensions, as developed in the theological literature to date. But the more specific question is: what kind of *imago Dei* does the technology reflect? Is it concerned entirely with human attributes – attributes of substance – or does it also reflect and uphold the relational element of what it means to be human, and the vocational aspect of humanity carrying out God’s purposes in the world? Furthermore, does the technology enable the eschatological development of the person, towards a destiny of Christlikeness, or does it merely aim to abolish human finitude, with no reference to its effects on the person and their spiritual and moral development?

Concerning the third question, about the attitude of the technology towards the material world – including the human body – it is vital that the technology is characterised by a positive and affirming approach to the material world and to the human body for it to be acceptable from a Christian perspective. This approach will honour the remarkable significance of somatic life in Christian theology and the importance of the resurrection body in the eschatological destiny of the believer. Appropriate embodiment will ensure that the technologically-transformed human person can continue to participate in the sacramental – material – aspects of Christian faith. In addition to ensuring appropriate embodiment, the technology should ensure that the identity of the transformed human person is preserved, since identity is closely aligned with bodily form, both theologically and psychologically. A key question to ask of a biomedical technology is not just how will it change a person’s body, but how will it change their identity? Furthermore, the right approach to the value of the individual body in relation to the material world will, in turn, ensure that the corporate body of humanity – human society – is able to flourish and is not compromised.

Concerning the attitude of the technology to past failures, there is some evidence of scientific hubris with both case studies, and indeed with other past therapeutic developments, despite the flaws of individual scientists and of the pharmaceutical industry as a system. Christians would want the attitude of a new technology to be one of humility, and a willingness to learn from past failures. As well as the question about the project's attitude to past failures, an additional question that could be asked is: what does humility look like with this project and these people in this therapeutic scenario?

The effect of a biomedical technology on autonomy is a key line of enquiry in the ethical evaluation of technology. It is often supposed that transhumanist medical technologies enable unbridled autonomy on the part of the user. On the contrary, I have shown here that, with past therapeutic technologies, although they may be implemented ostensibly with autonomy, that autonomy may be eroded by unintended consequences in the light of ongoing experience of the technology, or the way the technology is implemented across society. In any case, autonomy itself, while genuine in many medical situations, may be an ambiguous concept. Concerning the impact of a technology on autonomy therefore, rather than wondering what liberties the technology might *permit*, it would be advisable also to consider what aspects of human life it might *restrict*. This will enable ethicists – and indeed all stakeholders – to determine the full effects that adoption of a biomedical technology might have in a social context, and pre-empt any issues relating to oppression and coercion related to universal availability of the technology.

Finally, although transhumanist technologies are often thought to elevate individual subjective experiences, it is worth considering the extent to which they objectify the user of the technology – that is to say, treat the user as an artefact to be engineered, manipulated, desired or idolised. In general terms, I would suggest that the greater the imbalance between the subjective experience of the human person using the technology, and the objectification of their material body, the less likely the technology is to be acceptable to Christian ethicists, in line with Elaine Graham's reservations about this issue. Human subjectivity is important for human dignity, and this principle underpins modern clinical trial protocols. Consequently, a biomedical technology that

emphasises an individualised, experiential approach to life yet objectifies the human body as an artefact to be engineered by the technology undermines that dignity. Human distinctiveness is eroded, and the human person is reduced to the status of a machine or a laboratory animal.

The final chapter of this thesis will now draw some outline conclusions from this discussion about a possible future ethical approach to transhumanist enhancements and present a worked example of a possible future ethical approach. It will also discuss the implications of this ethical approach for the history of medical ethics, and implications for the church and for society.

## **Chapter 6 – Conclusion – Reimagining Transhumanism**

### **6.1. Review of the Thesis**

This thesis has examined how a Christian ethical evaluation of future transhumanist biomedical technologies can be informed by reflection on the ethical issues that arose from therapeutic developments that took place during the therapeutic revolution years of the twentieth century (1950-1990), and which are still in routine use at the current time.

Specifically, the thesis has set out to answer the following research questions:

- 1) What are the various issues of theological ethics presented by transhumanist developments?
- 2) To what extent were past therapeutic developments transhumanist technologies in their time?
- 3) What were the ethical concerns with past therapeutic developments? Have these ethical concerns been warranted in the light of subsequent experience?
- 4) How do issues identified with previous therapeutic developments inform the evaluation of future biomedical technologies?

These questions were explored by the comparative evaluation of two cases of past therapeutic developments – the contraceptive pill and SSRI antidepressants – and of some proposed future transhumanist technologies according to three sets of criteria. These comprised a general set of criteria to define what might constitute a transhumanist biomedical technology, derived from the transhumanist literature, and two sets of specific theological considerations for the ethical evaluation of a biomedical technology, derived from the work of Neil Messer and Elaine Graham. The purpose of using these criteria was to evaluate whether these past therapeutic cases have transhumanist features and the ethical implications of the therapeutic cases. When applied, these criteria identified four major theological domains that constitute ethical issues with both present and future biomedical technologies and represent areas of contrast and debate that would enable the evaluation of future transhumanist biomedical technologies in the context of medicine to date.

These four areas are: a) autonomy, b) nature, c) embodiment and d) the *imago Dei*. These are therefore important areas in the ethical exploration of future transhumanist biomedical technologies, in order to determine whether a biotechnology is permissible or desirable from a Christian perspective for use in human society. Prior to advancing general conclusions, I will now revisit the structure and development of this thesis.

Chapter 1 introduced the background of the project, and described the development of modern pharmacology, during the years of the so-called “therapeutic revolution”. The chapter discussed the impact of the therapeutic revolution on human life and society and described the historical context of the ethical questions being discussed, by reviewing the history of medical ethics to date. In the latter part of the chapter, the scope, assumptions and limitations of the study were described, and the methodology was discussed in detail – including why case studies were used, the rationale for the cases chosen, and the use and importance of criteria.

Chapter 2 explored in detail the objectives, history and claims of the transhumanist movement. It examined and critiqued the various philosophical influences on transhumanism and the approaches taken by different protagonists of transhumanism. This enabled a taxonomy of the transhumanist movement to be developed, so that its diversity could be understood, and common features explored. The chapter described three basic classifications of transhumanist scholarship: a) *philosophical transhumanism*, as exemplified by Max More and Nick Bostrom, who see transhumanism as a life philosophy; b) *technological transhumanism*, as exemplified by Ray Kurzweil and Hans Moravec, who see transhumanism from the perspective of the effects of technology (computing, artificial intelligence or cybernetics) on human life, and the benefits that it can bring; and c) *ideological transhumanism*, as exemplified by Katherine Hayles and Donna Haraway, who explore the effects of biomedical technology on human society, but in a way that is neutral to technology per se, and which primarily sees these technologies as tools for exploring cultural and ideological issues, from a feminist perspective. The chapter then described briefly the main transhumanist technologies that have been proposed and went

on to introduce and define concepts of autonomy, nature, embodiment and the *imago Dei* as key areas of theological and ethical critique of transhumanism. The chapter described two sets of criteria – a) general criteria by which a biomedical technology might be classified as a transhumanist technology, derived from the writings of the transhumanists, and b) specific criteria by which Christian ethicists might evaluate a transhumanist technology as permissible or desirable. These specific criteria are derived from the work of Neil Messer and Elaine Graham. There was then a preliminary discussion about how proposed future technologies which could be classified as transhumanist are evaluated against the general and specific criteria.

These two sets of criteria were then used to assess the two case studies of previous therapeutic developments which took place during the “therapeutic revolution” years (1950-1990) - the contraceptive pill and SSRI antidepressants. Chapter 3 presented the first of these two case studies, the development of the oral contraceptive pill, which was introduced in 1960. The first section of the chapter described the history of the oral contraceptive pill, discussing the events that led to its introduction, and the actions of the protagonists involved. The second section discussed the effects of the pill on the lives of women and men, on marriage, and on society and described the Roman Catholic Church’s theological and ethical concerns with the pill following its launch. Finally, the contraceptive pill was evaluated against the three sets of criteria for transhumanist technologies described in Chapter 2, to determine the extent to which, in its time, the pill could have been regarded as a transhumanist development, and to evaluate it from the perspective of theological concerns about transhumanist technologies.

Chapter 4 presented the second case study – the development of selective serotonin reuptake inhibitor (SSRI) antidepressants (for example, Prozac), which took place in the late 1980s. As with the previous chapter, the first section described the history of SSRI antidepressant development, discussing the events that led to their introduction, and the actions of the protagonists involved. The second section evaluated the effects of SSRIs on society – their therapeutic effect on patients with clinical depression and their use as mood-

altering drugs in individuals who are not depressed (the so-called “Prozac phenomenon”). This section discussed theological and ethical responses to SSRIs, looking in particular at the work of Roman Catholic scholar, John-Mark Miravalle, which was published in response to the “Prozac phenomenon”; the section critiqued in particular the natural law assumptions that Miravalle makes in his analysis.<sup>820</sup> In the same way as the previous chapter, the third section of the chapter assessed SSRI antidepressants against the three sets of criteria for transhumanist technologies developed in Chapter 2, to determine the extent to which, in their time, they could have been regarded as a transhumanist development, and to evaluate them from the perspective of theological concerns about transhumanist technologies.

Chapter 5 reconsidered current transhumanist proposals and technologies, in the light of previous experience with chemical therapeutics, as outlined in the two case studies presented in Chapters 3 and 4. The chapter began by summarising the findings of the case studies according to the criteria and determining the issues in theological ethics that arose through the development and clinical use of these medicines, which are relevant to a Christian response to transhumanist technologies.

The chapter then answered the research questions of this thesis. In terms of the first question, the various issues of theological ethics presented by transhumanist technologies, the discussion focused on the four specific domains – autonomy, nature/natural law, embodiment and the *imago Dei*, which were introduced and defined in Chapter 2, in the light of the case studies. The extent to which the contraceptive pill and SSRI antidepressants were, in their time, transhumanist technologies was evaluated, according to the criteria in Chapter 2. There was a discussion about whether the ethical concerns identified when they were first introduced have proved to be of concern with long term experience. The ethical response to future transhumanist biomedical

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<sup>820</sup> John-Mark Miravalle, *The Drug, The Soul and God: A Catholic Moral Perspective on Antidepressants* (Chicago: University of Scranton Press, 2010).

technologies was then reassessed, in the light of the ethical findings with previous medical technologies, and this reassessment was used to further refine the proposed criteria for transhumanist technologies.

As a result of this project, I have shown that four theological domains – autonomy, nature, embodiment and the *imago Dei* - are key points of contact between past and present medical interventions and future transhumanist biomedical technologies. They are therefore important areas for ethical evaluation of proposed radical future technologies.

The scientific history of the contraceptive pill and SSRI antidepressants, as discussed in the case study chapters, suggested that both therapeutic developments could be classed as transhumanist technologies, because of three observed features:

- a) their attributes as medical technologies, because their pharmacological effects are wide-ranging and have profound systemic effects on the individual human body;
- b) the total impact they have had on society, rather than just on the health and wellbeing of the individuals who take them, and
- c) the understanding of their application to humanity as transformational medical technologies in both scholarly and popular discourse.

However, in respect of the objective general and theological criteria specified in this thesis, I have argued that the oral contraceptive pill and SSRI antidepressants were transhumanist developments in their time according to some of the criteria, but less so according to others.

These two therapeutic developments were transhumanist in that they have had transformational effects on individual human flourishing and human society in terms of their effects on human relationships, welfare and quality of life. They were also transhumanist in the sense that they are a means of manipulating the human body with technology, and have been adopted, to some extent, with the hubris of technological achievement and human progress. However, these therapeutic cases were not transhumanist in the sense that they fell short of the



radical nature of some of the proposed future transhumanist technologies, such as mind uploading and radical cybernetics, which negate the significance of bodily life and which marginalise human bodily experience. On the contrary, both these previous therapeutic cases are medicines which work in and through the human body and uphold human bodily life in their actions and effects. Crucially, these two cases were ambiguous concerning whether they could be adopted without compromising individual autonomy. A key tenet of the transhumanist movement is that biomedical technology can be applied to the human person with the user having complete autonomy to manipulate his/her person at will, a tenet that has arisen from the roots of transhumanism in secular modernity. However, with both case studies, while the therapeutic intervention can be applied with autonomy at the outset, there are potential unintended consequences with the use of these agents, as there are with many situations in contemporary medicine, and these have the potential to undermine the user's personal autonomy.

I described the ethical concerns that have arisen with these two therapeutic cases, at the time of their introduction and since – which are largely natural law-based objections from a perspective of Roman Catholic moral theology. I argued that, during the time these medicines have been on the market, these ethical concerns have largely not been vindicated, but that both medical technologies have had positive ethical benefits for human society and flourishing and that there has been Christian ethical support for the use of these technologies from the principles of integrity and totality - the good of the whole person and of human society.

I went on to argue that, despite its significant role in the history of Christian ethics, natural law alone was no longer a sufficient method of ethical evaluation of biomedical technologies. This because even current medical interventions, such as the contraceptive pill and SSRI antidepressants, can manipulate the human body in a way that undermines traditional notions of natural and unnatural. Furthermore, because of their more radical nature, future biomedical technologies will be able to manipulate the human body more extensively than current technologies.

With future biomedical technologies, nature will have less significance as a standard for ethical evaluation. In a scientific and healthcare context where nature is less absolute and more open to manipulation, the question of whether a technology can be used with autonomy, and the effects of the technology on autonomy, will have a much greater influence on the ethical implications of the technology than any arguments derived solely from the effects of the technology on human nature. Furthermore, with increasing use of cybernetic components, especially those that are less inert than the prostheses and implants used in medicine to date, the concept of embodiment will have increasing significance in medical ethics. The more marginalised the human person is from a physical body, the less applicable the medical ethical principles and methods which have been developed to date will be to the evaluation of more radical future biomedical technologies.

I proposed that, in future, therefore, ethical approaches other than that of natural law will need to be actively applied to the assessment of new biomedical technologies. These might include consequentialism, which underpins many cost and utility ethical arguments in medicine at present, to consider the consequences of the new technology, as far as it is possible, and virtue ethics, which focus on the personal motivations and qualities of the technology user or practitioner.

I completed Chapter 5 by discussing how Messer and Graham's theological criteria for evaluation of transhumanist biomedical technologies could be revised in the light of experience with past cases. The revisions are based on examination of these cases according to the four theological domains identified earlier in Chapter 5 – namely, autonomy, nature, embodiment and the *imago Dei*. For example, concerning the attitude of the technology towards the human body, in future, it will be important to consider the technology's effect on the person's identity, not just their body. As far as effects on the *imago Dei* are concerned, it will be important to consider exactly what aspects of the *imago Dei* are affected when the technology is applied, and that the eschatological dimension – the ability to grow towards a Christ-like destiny – is not compromised.

As a result of this thesis, I have proposed various possible refinements to Messer's four diagnostic questions, as far as radical transhumanist biomedical technologies are concerned. Whether the transhumanist technology is good news for the poor will depend on how scalable the technology is and therefore how quickly it can be made universally available at an affordable cost for as many people as possible. The question therefore might be rephrased: is the technology good news for the poor, the marginalised and for public funding?

In terms of the second question about the *imago Dei*, it is to be hoped that applications of future transhumanist technology would enable people to fully conform to the image of God, rather than being an attempt to be "like God". It would not be permissible from a Christian perspective for a technology to actively enable a person to remodel their body and mind according to their will or whim, in their own image (*imago hominis*). Furthermore, the enhanced person should reflect the *imago Dei* in all its dimensions, as developed in the theological literature to date. So the more specific question is: what kind of *imago Dei* does the technology reflect? Is it concerned entirely with human attributes – attributes of substance – or does it also reflect and uphold the relational element of what it means to be human, and the vocational aspect of humanity carrying out God's purposes in the world?

Concerning the third question, about the attitude of the technology towards the material world – including the human body – it is vital that the technology is characterised by a positive and affirming approach to the material world and to the human body, for it to be acceptable from a Christian perspective. This approach will honour the remarkable significance of somatic life in Christian theology and the importance of the resurrection body in the eschatological destiny of the believer. Appropriate embodiment will ensure that the identity of the technologically transformed human person is preserved and that the person can continue to participate in the sacramental – material – aspects of Christian faith. A key question to ask of a biomedical technology is not just how will it change a person's body, but how will it change their identity? Furthermore, the right approach to the value of the individual body in relation to the material world may, in turn, help to ensure that the corporate body of humanity – human society – is able to flourish and is not compromised.

Concerning the attitude of the technology to past failures, there is some evidence of scientific hubris with both case studies, and indeed with other past therapeutic developments, despite the flaws of individual scientists and of the pharmaceutical industry as a system. Christians would want the attitude of a new technology and its developers to be one of humility, and a willingness to learn from past failures. As well as the question about the project's attitude to past failures, an additional question that could be asked is: what does humility look like with this project and these people in this therapeutic scenario?

## 6.2. General Conclusions

I now advance the following general conclusions based on the results and discussion in this study:

- 1) For transhumanists and pharmaceutical scientists alike, a key motivation for the development of any medical technology is to alleviate human suffering and enhance human flourishing specifically by means of material intervention with the human body.<sup>821</sup> The two cases of past therapeutics in this thesis, which demonstrate some of the characteristics of transhumanist developments, show that these two significant advances during the therapeutic revolution years of the twentieth century (1950-1990) have had demonstrable benefits for human health and wellbeing. I would argue, therefore, that if there have been such healthcare and wellbeing benefits with pharmaceutical medicine to date, then even greater benefits may be possible in future, with more radical, invasive, biomedical technologies, such as those proposed by transhumanists. This suggests that, while some Christians may be suspicious of medical technology, either for cultural or theological

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<sup>821</sup> In addition, transhumanists are proactive about protecting humanity from what they call “existential risk” – that, in future, the existence of humanity could be threatened by some unexpected phenomenon, such as a deadly virus or an asteroid from space (M.J. McNamee and S.D. Edwards, “Transhumanism, medical technology and slippery slopes”, *Journal of Medical Ethics*, 32 (2006), pp. 513-518).

reasons, a position of extreme bio-conservatism is probably not tenable for Christians, simply because of the humanitarian implications of the possible benefits of future biomedical technologies, which would be consistent with a Christian understanding of human flourishing. Indeed, an argument for strict bio-conservatism on natural law grounds is ultimately not consistent with Christian compassion and commitment to healing, or the church's advocacy and practice of healing ministry. Moreover, extreme bio-conservatism towards medical technologies on the part of Christian theologians or the church would not be credible to the scientific community and might inhibit dialogue between science and religion on other issues. Furthermore, regardless of Christian apologetics to the scientific community, this stance would also be counterproductive to the church's mission in the world in other respects, given the universal human appeal of compassion and humanitarianism in many societies.

- 2) An ethical issue which may engender caution with the exploration of radical - and expensive - transhumanist biomedical technologies is the extent to which such radical technologies should be developed in future, given the pressing medical needs in some countries of the world yet which are unmet by technologies and treatments that are already available, but just not accessible in those countries. Should governments and big corporations be investing considerable resources in innovative, radical biomedical technologies when diseases such as HIV and tuberculosis are still endemic in sub-Saharan Africa, due to a lack of access to medicines and services? Resources – budget and people – are not in unlimited supply – and I would venture that governments should address known needs concerning availability of, and equity of access to, currently available medical technologies first. Nevertheless, governments do need to have systematic and coherent policies on the funding of future biomedical technologies, for two good ethical reasons. First, such policies will serve to regulate individual and corporate innovators in an appropriately permissive way, so that innovation is not stifled, and that research and development of biomedical technologies can proceed but is directed towards humanitarian ends which support the

common good. Second, such policies will manage the technology markets to ensure equity of access and that future biomedical technologies are indeed “good news for the poor” (according to Messer’s diagnostic questions) in that they are accessible and affordable for all sections of society. This is central to an ethic of human flourishing within the Judaeo-Christian tradition; if *shalom* is defined, as Cornelius Plantinga defines it, as a “universal flourishing, wholeness, and delight—a rich state of affairs in which natural needs are satisfied and natural gifts fruitfully employed all under the arch of God’s love”,<sup>822</sup> - then it should encompass just and equitable access to medical technologies across the whole of human society, as this would support the Kingdom aspiration of “good news for the poor”. Some transhumanists – for example, Ray Kurzweil and Hans Moravec<sup>823</sup> – are less interested in the socio-cultural implications of transhumanism than others, but medicine has always been a social and humanitarian venture. It will be important that robust public policy on the deployment and use of future radical medical technologies accounts for a comprehensive ethical analysis of those technologies that is in keeping with the aims and objectives of medicine to date.

- 3) As illustrated by the scientific history of the development of the contraceptive pill and SSRI antidepressants in Chapters 3 and 4 respectively, scientific endeavour in pharmacology and drug discovery, as in any area of science, is not a purely abstract activity, but always takes place in a social and political context. This has been the case in the history of drug development to date in general, as shown in Chapter 1 of this thesis, as well as in the two case studies and, given the contingencies of human society, this situation is unlikely to change in

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<sup>822</sup> See Graham O’Brien and Timothy Harris, “What on Earth Is God Doing? Relating Theology and Science through Biblical Theology”, *Perspectives on Science and Christian Faith*, 64 (2012), pp. 147-156.

<sup>823</sup> Ray Kurzweil, *The Age of Spiritual Machines: When Computers Exceed Human Intelligence* (New York: Penguin, 1999); Hans Moravec, *Mind Children: The Future of Robot and Human Intelligence*, (Cambridge: Harvard University Press, 1988).

future. I concluded above that extreme bio-conservatism is ultimately incompatible with a Christian ethic of healing and medical care. However, on the other hand, awareness of the social and political context of biomedical research is a powerful corrective to Christians who, perhaps because of scientific ignorance, regard science with uncritical awe and have unrealistic expectations of the possibilities of science, and who therefore may believe that religion cannot in any way influence scientific and technological “progress”. The ongoing inability to completely eradicate the endemic diseases in Africa is not simply a scientific problem, it is also a cultural, financial and political problem. That is indicative of why cultural, financial and political factors must be accounted for when developing a comprehensive medical ethical framework for the transhumanist age. This is important for humanity theologically, as well as ethically, in respect of technologies, given Peter Manley Scott’s insistence that an understanding of the *imago Dei* abstracted from its social context is inadequate, and that, in a technological world, such an understanding of the *imago Dei* must reflect the spatial and temporal setting of material human life.<sup>824</sup> Nevertheless, the importance of social context in medical science should not be at the expense of realism in the task and objectives of science. The realistic nature of a scientific advance is possibly easier to overlook when considering the social impact of technologies than when considering the effects on the individual human person because the social context in which the technology is being used will act as a lens through which it is interpreted. The potential for social constructs is why evaluations of future transhumanist biomedical technologies – both medical and ethical - should be evidence-based, according to objective verifiable criteria, using similar methodologies to those that pharmacology has developed over the last fifty years during the therapeutic revolution years. However, there may be a need for greater awareness of implicit biases that have

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<sup>824</sup> Peter Manley Scott, *Anti-Human Theology: Nature, Technology and The Post-Natural* (London: SCM, 2010), p. 93.

occurred in the past (for example, lack of attention to gender differences in trial population). Going forward, this evidence-based approach will help to ensure that ethical responses to new biomedical technologies from the church, or indeed other agencies, are based upon objective criteria, and do not reflect either an uncritical acceptance of technology, on the one hand, or a knee-jerk rejection of technology, on anti-scientific or cultural grounds, on the other. This study has used objective criteria to examine, and find points of ethical contact between, past and potential future biomedical technologies, in order to derive an evidence-based ethical approach to evaluating future biomedical technologies.

- 4) A survey of the scientific history and development of the two case studies presented in this thesis – the contraceptive pill and SSRI antidepressants – together with an evaluation of them according to the three proposed sets of criteria, suggests that these therapies were, in many ways, transhumanist developments, by the standards of their time, even though they were not the radically invasive technologies envisaged in the future by transhumanist scholars, such as mind-uploading and cybernetics. The case studies show that social and cultural concerns about what were at the time new medical technologies – for example, about how society would be affected, how relationships would be changed, and how the technology might be misused – stimulated significant intellectual discourse. Similar cultural and social concerns exist now with proposed future radical transhumanist technologies. However, regardless of current popular fears and cultural concerns with future transhumanist technologies, these technologies may, in due course, yield medical and social benefits, in the same way that past therapeutic technologies have. I would suggest then that a Christian ethical evaluation of a new technology should incorporate lessons learnt from past cases of medical technologies where initial fears were not vindicated, as has been done in this thesis. Lessons learnt from the past may help to identify and rule out any concerns that are largely social and cultural and which are not ultimately prohibitive from a Christian perspective.



- 5) As described in Chapter 2, some scholars, such as Thweatt Bates, Campbell and Walker and Garner, have attempted to reconcile transhumanism with Christian belief, and with a Christian view of humanity, exploring the themes of perfectibility, immortality and Christian social concern.<sup>825</sup> Helpful as these attempts at dialogue might appear, they are superficial, in that they gloss over significant underlying differences between Christianity and transhumanist thought, especially concerning embodied life, soteriology and eschatology. The objective theological criteria used in this thesis help to analyse and identify the actual points of divergence between Christian doctrinal principles and the claims of transhumanism.
- 6) While I have argued here that it is imperative for Christian churches to engage with technology, in terms of enquiring about it, understanding and evaluating it, churches are under no obligation to advocate the implementation of a technology if there are significant ethical concerns, either from a perspective of bioethics, social justice or the distinctiveness of human life. As mentioned in Chapter 1, the principle that there is no stigma in doing nothing is well-established in medical ethics.<sup>826</sup> Notwithstanding point 4) (above), if a medical intervention – whether past or future – is perceived to carry significant risks, then it is reasonable - and indeed ethically defensible - to employ the axiom “First do no harm” and be cautious until the risks of the technology are better understood. In the context of Christian ethics, “harm” might consist of something that hinders the fulfilment of the Kingdom of God, or which compromises loving relationships, not just something that disrupts the functioning of the biological body. Public policy on the regulation and deployment of

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<sup>825</sup> Heidi Campbell and Mark Walker, “Religion and Transhumanism: Introducing a Conversation”, *Journal of Evolution and Technology*, 14 (2005), pp. i – xv; Stephen Garner, “Transhumanism and Christian Social Concern”, *Journal of Evolution and Technology*, 14 (2005), pp. 29-43.

<sup>826</sup> Vivian Nutton, “Medicine in the Greek World: 800-50BC”, in *The Western Medical Tradition 800BC – 1800AD*, edited by Lawrence Conrad, Michael Neve, Vivian Nutton, Roy Porter and Andrew Wear (Cambridge: Cambridge University Press, 1995), p. 29.

such technologies should take all risks into account – including risks to the goods of human life, as well as medical and scientific risks, and should, where necessary, reflect the important medical ethical principle of “first do no harm.”

- 7) Christian ethicists and churches need to have a comprehensive Christian medical ethic to apply to biomedical interventions as the transhumanist era dawns. I argued in Chapter 5 that an approach based largely on natural law alone – as has characterised religious responses to previous therapies, such as the contraceptive pill and SSRI antidepressants – is inadequate. This because radical biomedical technologies render the traditional demarcation between natural and unnatural indistinct. Furthermore, there are ethical benefits of these therapies that cannot be assessed by an appeal to nature alone, for example, positive impacts on human function and quality of life, and on wider society. Yet, ironically, these are the benefits that John-Mark Miravalle seems to discount as positive ethical features in his ethical analysis of SSRI antidepressants, because of his insistence on a natural law approach, aligned with the stance of the Roman Catholic church regarding the contraceptive pill.<sup>827</sup> A natural law approach to therapeutic ethics only perpetuates the notion of a dualism between science and religion, and this is problematic for any dialogue between the church and the scientific community. Likewise, a consequentialist ethical approach, which has characterised much bioethical deliberation in the late modern era, and is the approach used by Julian Savulescu in his advocacy of radical biomedical technologies,<sup>828</sup> is also flawed as a sole means of ethical evaluation of therapeutics because it fails to account for unintended consequences of medical interventions arising from unexpected biological actions. Such

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<sup>827</sup> John-Mark Miravalle, *The Drug, The Soul and God: A Catholic Moral Perspective on Antidepressants* (Chicago: University of Scranton Press, 2010) pp. 2-3, pp. 50-55.

<sup>828</sup> Julian Savulescu, “The Human Prejudice and the Moral Status of Enhanced Beings: What do we owe the gods?”, in *Human Enhancement*, edited by Julian Savulescu and Nicholas Bostrom (Oxford: Oxford University Press, 2009), pp. 211-250.

unintended consequences have been noted for both the case studies described in this thesis and are commonplace in all therapeutic areas in pharmacology. Furthermore, consequentialism does not account for the moral agency and motivation of the technology user or practitioner, which has traditionally been important in medical ethics. Virtue ethics, which consider the motivations of the technology user or practitioner, are potentially valuable in modern technological medicine because they help to identify the reasons for using new biomedical technology, regardless of the nature of the technology. Furthermore, a virtue ethics approach has the potential to provide continuity between the future medical ethical issues which might be encountered with radical transhumanist biomedical technologies, and the ancient Hippocratic medical ethical tradition. I conclude that virtue ethics may have an important role in the ethical assessment of future medical technologies.

- 8) Application of the three sets of objective criteria to the two case studies and to some future transhumanist developments has identified four ethical domains that are important points of contact between past and potential future medical technologies – autonomy, nature, embodiment and the *imago Dei*. Christian ethical evaluation of future medical technologies should therefore account for the effects of the technology on autonomy, the impact of the technology on the person's embodied state and the assumptions the technology makes about the *imago Dei*, as well as natural law. Although natural law will continue to have some value in medical ethics, as a means of framing discussions, it will no longer be a sufficient sole means of evaluating future biomedical technologies because of their potentially radical and highly invasive effects. The other areas mentioned here will have increasing ethical significance in future.
- 9) I argued earlier that a purely natural law-based ethic for assessment of transhumanist biomedical technologies was also inadequate because it is individualistic and atomistic and does not account for the social ethical aspects of these technologies, such as concerns over the social impact of immortality and the equitable distribution of such technologies. I would

also argue that advocates of transhumanism are naïve to think that biomedical technology is able to solve social and spiritual problems, as well as medical ones, and that medical science will somehow bypass moral agency and eliminate these social ethical issues in a human population going forwards. The reality is that, even if biomedical technologies with positive benefits are universally deployed and are acceptable ethically in terms of human equity, dignity and community, human beings will still need to negotiate the day-to-day ethical dilemmas of human life regardless of technology use.

The original contribution to knowledge made by this thesis is that it forges a connection between the ethical evaluation of medical interventions to date and proposed future transhumanist biomedical technologies, and it locates the transhumanism movement within the wider history of medicine. It therefore shows that careful analysis of previous medical developments in the modern era to date can influence our ethical understanding of potential transhumanist proposals.

By reviewing significant past medical innovations according to objective criteria for transhumanist developments and examining theological objections to transhumanism, I have developed a methodology for ethical analysis that is common to past and future medical developments and could be used to assess future radical biomedical technologies from a Christian perspective, in a way that is coherent and continuous with medical ethics to date. I have shown specifically that four domains of theological evaluation - a) autonomy, b) nature, c) embodiment and d) the *imago Dei* – provide points of contact between past and proposed future medical biomedical technologies and are important themes for ethical analysis of proposed future transhumanist technologies to assess their acceptability from a perspective of Christian ethics.

Future work in this area would involve the application of this “four domains” ethical methodology to specific proposed future biomedical technologies. This might include current proposed transhumanist developments, such as

mind uploading or gene therapy, but also future technologies that have not yet been considered. I provide a preliminary worked example of this below.

### 6.3. Application of Four Domains Methodology for Ethical Evaluation of Biomedical Technology

As discussed here, some pharmaceutical technologies to date – for example, the contraceptive pill and SSRI antidepressants – have had significant effects on human society, as well as individual health and wellness. In the future, more radical biomedical technologies may be introduced that are essentially pharmacological interventions. For example, in future, it may be possible to have a “magic implant” fitted which releases a combination of metabolically active nanoparticles and gene therapy substances (viral vector and nucleotide substances) which would have the effect of radically extending the human lifespan to, say, 200 years, improving physical functioning during that lifespan and effectively eradicating dementia and cognitive decline. Once such an implant has been developed commercially, it could be inexpensive enough to distribute to all adults in the population, and could be fitted as a simple, minor surgical procedure at a local doctor’s surgery or NHS clinic.

Such an intervention would clearly have enormous health and wellbeing benefits for the individual. It would also have a profound impact on society and would present the ethical issues related to extended longevity described in Chapter 2. These might concern the economic pressures of an enlarged population, availability of jobs, attitudes to work, the ability of society to change and innovate and increased pressure on marriage as a permanent, lifelong relationship, and the development of alternative lifestyles as a result of these changes.

A “magic implant” would indeed have ethical implications for society, to which governments, policy makers and corporations would need to respond. However, how does this technology look when analysed according to the domains of autonomy, nature, embodiment and the *imago Dei*? In terms of autonomy, it is unlikely that such an implant acting at the biochemical level

would exert effects on freedom of decision-making, unlike some psychoactive drugs. The implant could be fitted at will – but could it be removed at will, with no adverse effects other than the loss of its longevity benefits, if the user no longer wished to use it? As far as nature is concerned, the insertion of such a “magic implant” with radical whole-body systemic effects constitutes an intervention that prevents the person fulfilling their natural attributes and function, in the same way as hormonal contraception does, if viewed from a natural law ethical perspective. However, such an intervention appears to be more aligned with the natural ends of human bodily life than, say, mind uploading or radical cybernetic remodelling, and there would be significant potential ethical benefits of the implant if it were used well by the user, as I have shown is the case with oral contraception and use of SSRI antidepressants for neuroenhancement. So the “unnatural” nature of the implant does not necessary render the intervention unethical from a broad Christian ethical perspective. Then there is there is the question of embodiment. While the “magic implant” would be an invasive intervention, it would still exert positive effects in and through the human body and would enhance bodily life, rather than undermine it, as opposed to mind-uploading and radical cybernetic remodelling, which negate the body, and marginalise its significance. Indeed, drug-eluting stents and implants are already in use primarily to increase life expectancy – for example, the use of anticoagulant-eluting stents to improve life expectancy in coronary disease or stroke. These are essentially enhancements, albeit more minor than the “magic implant” proposed here, in terms of quantitative effects on longevity. Consequently, in terms of embodiment, such a “magic implant” is, in fact, similar to some of the implants used at the current time in terms of ethical status, even if its clinical utility is greater.

What are the implications of such a “magic implant” in terms of the *imago Dei*? The answer here is more complex. A “magic implant” would offer considerably extended longevity, yet with the possibility of eventual death and finitude. Such longevity has the potential to transform family and societal relationships, in the same way that hormonal contraception has

done, and lead to positive opportunities for individuals to do good and improve society. This would be positive in terms of a relational approach to the *imago Dei* and would also possibly benefit a functional approach to the *imago Dei* – extended longevity would probably benefit someone’s ability to serve God in the world and exercise their God-given vocation. The potentially interesting effect of such a technology is on the eschatological approach to the *imago Dei*. The question is whether the technology would enable the person to achieve their eventual destiny of Christlikeness and being with Christ after life in this world. The longevity provided by the technology might indeed help the user to grow towards Christlikeness but, if longevity became extended indefinitely, then when would the person achieve their eventual destiny of being with Christ beyond this world? The problem of delayed or alternative eschatology is a key theological critique of transhumanism.

This would be a particularly significant issue if it were possible, for example, to extend life even further by replacing the “magic implant” contents every 100 years, thus enabling the person to be effectively immortal. This would not only render obsolete many aspects of medical care in the face of human suffering, it would undermine an individual’s finitude and hinder their ultimate fulfilment of a destiny with Christ beyond this world. However, it would be a man-made immortality. A situation might arise where there were insufficient implant replacements for all citizens, either due to lack of availability or funds. How then would it be decided who lives and dies? Of course, similar ethical decisions about resource allocation are currently made about expensive treatments for rare diseases on a consequentialist basis. However, current resource allocation decisions are concerned with providing a therapy for a disease, which may only have a marginal impact on a person, whereas this future situation is about withholding a life-giving enhancement, which is much more problematic.

If, on the other hand, the “magic implant” gave a single finite increase in longevity, then the key question for potential users of a such an implant would be: when and how might death come? Of course, some “magic

implant” users might be killed in a road traffic accident at the untimely age of 120. There is then the question of whether there might be any adverse – or indeed potentially fatal – unintended consequences of long-term use of the implant. Unintended consequences have been a common issue in ethics of medical treatment to date, and there is no reason why this might not still be the case in future.

The analysis of the “magic implant” technology according to this autonomy, nature, embodiment and *imago Dei* framework indicates that, while a single-use medical technology which increases longevity may be culturally alien to current society and will introduce some ethical issues, it is not necessarily a technology that is unacceptable from a perspective of Christian ethics and a Christian view of human life. The key caveat is that the technology does not affect human finitude; the problem with medical technologies that confer “immortality” is that, firstly, they delay the person’s realisation of their ultimate destiny in Christ and secondly, they bring with them the ethical problems of an “immortality” that is dependent on human initiative.

#### 6.4. Concluding Comments: Transhumanism in Historical Perspective

I began this thesis in Chapter 1 by outlining that medical ethics have developed through three phases to date – first the Hippocratic phase, characterised by an emphasis on the duties and behaviours of the practitioner; then the Renaissance phase, when ethical thinking about medicine began to focus on the techniques of medical intervention, and the consequences for the patient; and then thirdly, the Late Modern phase, which encapsulates modern bioethics, where medical ethics are not just concerned with the actions of the practitioner or the consequences of the treatment, but also about the equality of healthcare resource distribution and the impact of medicine on human rights.

From this thesis, I conclude that a fourth phase of medical ethics is needed to evaluate the future biomedical technology developments proposed by transhumanists. This will need to comprise a comprehensive ethical system, which will not rely on a single ethical methodology, such as natural law or



consequentialism, but will allow a range of forms of ethical analysis. The transhumanist philosopher, F.M. Esfandiary claimed that transhumanism “deplores standard paradigms”; it is perhaps right then that a form of ethical analysis equal to the challenges of radical transhumanist biomedical technology should also not be constrained by analysis in any one standard ethical paradigm. The analysis of future biomedical technologies described here, according to the criteria of Messer and Graham, paying particular attention to the domains of autonomy, nature, embodiment and the *imago Dei*, offers a comprehensive approach to ethical evaluation of biomedical technologies. It is an approach that is broad enough to evaluate a variety of potential future technologies, but incisive enough to identify the significant issues and gain a clear understanding of the acceptability of a technology from a Christian perspective.

This comprehensive approach does medical ethics the service of reconnecting modern bioethics with both the ancient medical ethical tradition, with its emphasis on the virtue of the practitioner, and the history of the Christian healing tradition with its emphasis on compassion in medical care. This comprehensive ethical understanding of medicine to date, which can then be applied to the future transhumanist biomedical technologies of tomorrow, would not only be a positive development for current bioethics in medical and healthcare practice, it would refocus discourse in this area on the broader goods of human life in a postmodern world, and would set the scene for a Christian understanding of human life in its current and future postmodern technological context.

As such, it would enable greater dialogue between scientific and theological concerns, in respect of future radical biomedical technologies. Furthermore, if this ethical framework is used to inform the development and implementation of future transhumanist biomedical developments, it would enable the development of technologies that would achieve the important objective of radical reduction and alleviation of human suffering, while being acceptable to Christian ethics and maintaining the defining features and dignity of human life, from a Christian perspective.

To achieve this would constitute the full flowering of the medical science endeavour, which has so far encompassed the so-called “therapeutic revolution” - the growth of modern industrial pharmacology since the beginning of the twentieth century - and possibly even the development of empirical, iatrochemical medicine since the seventeenth century. This ethical framework would give Christians and churches the confidence to reject the cultural stereotypes of biomedical enhancement, characterised by science fiction motifs and “brave new world” ideology, and to embrace those forms of biomedical technology which have the potential to alleviate human suffering and improve human wellbeing, but which do not undermine the dignity and distinctiveness of human life from a Christian perspective. Radical biomedical enhancement technologies are neither an absolute evil to be rejected at all costs, nor are they a panacea for every medical and social disease. The reality is that they are somewhere in between; many technologies will have significant benefits to human health and wellbeing, but need not fatally compromise the autonomy, the nature, the embodied status or the *imago Dei* of the human being, from a perspective of theological ethics. With this kind of ethical approach to the evaluation of transhumanist technologies, both the church and society will be truly prepared for the enhancement revolution, which will bring more profound change to human society and will be more far-reaching than the therapeutic revolution.

In this thesis, I have demonstrated how review of previous therapeutic developments can inform an ethical evaluation of proposed future transhumanist biomedical technologies. Acceptability of a biomedical technology from a perspective of Christian ethics can be established using an analysis of the technology according to the domains of autonomy, nature, embodiment and the *imago Dei*. According to this analysis, some proposed future transhumanist technologies will be found to be acceptable ethically, even if they are unfamiliar culturally. If this is the case, then these transhumanist technologies may be as beneficial for the alleviation of human suffering as some previous therapeutic technologies from the “therapeutic revolution” years of the twentieth century.



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