

Exploring Interdisciplinarity: a theoretical consideration of Bioethics at the interface between Theology, Philosophy and Life Sciences

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Abstract: Complex ethical problems resulting from research and advances in biotechnologies increasingly confront Christian ministers and theologians with difficult and complex moral dilemmas. Where do they turn to in order to give guidance and answer questions concerning practical bioethical problems? This article argues that Bioethics as the systematic study of specific moral dilemmas implies conjoining a variety of ethical methodologies in an interdisciplinary framework. In trying to clarify this complex nature of Bioethics when practiced specifically from a Christian Theological viewpoint, the article examines theoretical considerations regarding the interface between three contributing disciplines, viz. Theology, Philosophy and Life Sciences. This is done by investigating three questions: What is the place of Bioethics in the hierarchy of disciplines? In what way do Philosophy, Theology, and Life Sciences contribute to the theoretical foundations of interdisciplinary Bioethics?, and How do different methodologies relate to one another in order to show the true interdisciplinary character of Bioethics? The article concludes that it is vital to re-examine the theoretical basis of Bioethics as a philosophical grounding or methodology in order to place moral knowledge within a meta-theoretical and epistemological framework. It is clear that Bioethics is a complex endeavour served by many disciplines, as well as a complex interdisciplinary form of knowledge. Scholars, scientists and theologians must all learn to transcend the barriers between the multitude of interrogational disciplines and endeavour to work towards designing a well-founded and meaningful framework within which the methodological assumptions and theoretical grounding have been clarified, and one which also recognizes the complex interdisciplinary nature of Bioethics.

Keywords: Bioethics; Interdisciplinarity; Theology; Philosophy; Life Sciences; Hierarchy; Ethics; Methodology.

Disciplines: Theology; Ethics; Bioethics; Philosophy.

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1. Introduction

The domain of Bioethics as an intellectual, autonomous and social research field has grown extremely rapidly over the last four decades.¹ Complex ethical problems resulting from research and developments in fields such as stem cell research, artificial reproductive techniques, prenatal testing, health care, abortion and environmental issues – to name but a few - need to be addressed not only by scientists, but also by theologians and counsellors.

When Christian ministers are confronted in their congregations with moral dilemmas resulting from these developments in Bioethics, they could turn to different sources for direction in order to answer questions such as: How much of Bioethics is Life Sciences? How much is Ethics, and how much is in the domain of the humanities or social sciences? Where does Philosophy fit in the expansive vision of Bioethics? Pellegrino (1997:1) takes the argument even further by asking: “Is it merely one discipline among many, or can it make some claim to the role of *primus inter pares*?” Given the potential impact of these problems on the spiritual well-being of members of their congregation, it is unavoidable to engage in a rigorous theological and ethical analysis in order to face these questions to which we do not readily know the answers (Cole-Turner, 2006:943). Counselling and guiding members from a specific religious background implies decision-support systems that embrace procedures, methods and knowledge systems capable of dealing with the complexity of techno-induced bioethical problems.

When practising Bioethics as applied to a specific practical problem, it is often unclear whether to regard it as a discipline, a specific field, an interdisciplinary domain, or a mere “collection of loosely related enterprises” (Wildes, 2000:147).

What must be made clear from the outset is that the sphere of Bioethics has become much wider than what was previously known as medical ethics and applied or practical ethics (Frey and Wellman, 2006:1; Bok, 1977:137-140). This article argues that Bioethics as the systematic study of moral dimensions – including moral vision, decision-making, conduct, and policies in both Life Sciences, health care and the medical fields - implies a variety of ethical methodologies in an *interdisciplinary* setting (cf. Reich, 1995:[57] p. xxi; Shannon, 1987:2; Rae and Cox, 1999:vii; Wildes, 2000:2-3; Sugerman and Sulmasy, 2001:5-6; Kuhse and Singer, 2006:1). It is not only of real and pressing interest to many other related disciplines such as Law, Anthropology etc., but is also a form of enquiry with enormous potential to make interdisciplinary research tangible in that contemporary bioethical issues can be dealt with in their full complexity.

Interdisciplinary work generally denotes the combining of knowledge from a number of disciplines to create syntheses that are more appropriate for certain problem areas arising -- in this case -- from new scientific developments. Both disciplinary rigour and integration resulted in new knowledge systems that yield new understanding, which could not have emerged from a single disciplinary avenue (cf. Barthes, 1989:72; Boix-Mansilla and Dawes, 2004:4). What remains problematic is that there is as yet no agreement as to how the different methodologies contribute to the interdisciplinary character of Bioethics.

1. For the history of this development, see Verhey & Lammers (1993:1-6); Borry et.al. (2005:55-60), and Hauerwas (1978).

In brief, therefore, the overall aim of this article is to contribute to this discussion in trying to clarify the complex nature of Bioethics when practiced from a Christian Theological viewpoint, also taking into consideration the roles played by Philosophy and Life Sciences. I shall frame the discussion through the consideration of the following three broad questions: What is the place of Bioethics within the hierarchy of sciences? In what way do Theology, Philosophy and Life Sciences contribute to the theoretical foundations of interdisciplinary Bioethics? How do different methodologies relate to one another, and what does this reveal about the interdisciplinary character of Bioethics?

It will be indicated that Bioethics facilitates a more productive interdisciplinary discourse across the many methods of its informing disciplines, and should therefore not be regarded as a discipline.

2. Bioethics and the hierarchy of sciences

It is not possible to understand the interdisciplinary nature of Bioethics without first examining the role that the various disciplines contribute and should contribute to it, since interdisciplinary approaches are always an engagement with different modes of knowledge (Moran, 2002:2). In order to understand how knowledge may be managed when making decisions in Bioethics, it seems appropriate to discuss the place Bioethics has in the hierarchy of knowledge systems, and then define the structural aspects thereof, before venturing into the interdisciplinary character thereof. A brief note on the relation between knowledge in theory and knowledge in practice is therefore imperative.

2.1 Knowledge and reality

When dealing with moral epistemology concerning the practice of Bioethics, the debate over the question of whether there is such a concept as ‘moral knowledge’² is not new, and neither is it settled. According to Jonsen and Toulmin (1988, 26-27; 34; 327), moral knowledge is best understood as practical knowledge or knowledge that is concrete, temporal and preventative. It is therefore very closely linked to reality in the form of particular circumstances, to times and places, and can be distinguished from theoretical knowledge which is characterized as being idealized, a-temporal, and necessary. Following the Aristotelian view that moral knowledge is a species of practical knowledge³, foundational arguments aim at knowing truly, while practical arguments are methods for resolving problems. Aristotelians argue that theoretical knowledge can be spoken of in term of “necessity” and “validity” because its elements are applied within a system of concepts. Wildes (2000:182-183) rightfully sees Bioethics as being in confrontation with the limits of human knowledge about what is right and wrong when making decisions. The tendency to downplay the limits of our knowledge is problematic because it is “only in knowing the limits that we can come to know the real possibilities of the field”. In order to arrive at a reasonable degree of objectivity and some form of validity in bioethical decision-making, several aspects have to be taken into consideration,

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2. The second half of the twentieth century brought a new interest among philosophers on whether or not ethics and bioethics for that matter can be founded upon a rational basis. For a collection of the work of a number of leading scholars with a range of perspectives, see Paul et al. (2002).
 3. Aristotle already distinguished between practical knowledge (*techné*), wisdom (*phronesis*), and theoretical knowledge (*episteme*).

one of which is confidence to make such decisions from self-knowledge – or knowledge of the specific tradition or community from which the ethical action will be taken.⁴ Organizing standards for moral discourse from within an environment in which our options are already formed by a particular paradigm of moral knowledge, can also include values, principles, rules or the cases before us. While it is not the aim of this article to elaborate on these issues, it is however important to make clear the viewpoint from which moral knowledge is seen, and to indicate the relation between moral knowledge and theoretical knowledge.

When considering the status of individual decision-making as Peter Singer (1993:155) does, the question arises if it can be seen as an outcome of knowledge, a matter of feeling, or a custom. John Rawls (1971) shows that the issues on decision-making are simply too complex than merely to regard it in such monolithic terms. Justice can be achieved in the context of a social contract within which we all autonomously agree on how the basic institution of a just society must be structured. According to Singer (1993:155) Rawls tries to combine a Hegelian recognition of the priority of community with a reinterpretation of the Kantian insistence of autonomy (cf. Rawls, 1971:10-11; 14-15; 28-29; 96-97). Influenced by another Hegelian claim that moral personality is and must be formed by the community in which the person lives, Dewey shows in *Human Nature and Conduct* (1922) that although individuals are shaped by their community, they can devise new solutions to social problems through rational enquiry. It is therefore impossible to separate decision-making about bioethical issues from the social context in which the problem is considered, and more importantly from the relational identity thereof – not only between human beings, but also to the environment and reality as a whole.

2.2 Evolution of disciplines and relations⁵

The word “interdisciplinary” generally suggests some kind of critical awareness of the relationship between hierarchy, knowledge and power. It provides a

democratic, dynamic and co-operative alternative to the old-fashioned inward-looking and cliquish nature of disciplines (Moran, 2002:2-3).

Bioethics was called a ‘science’ by Potter as early as 1970 (Dutney, 2001:59), while Callahan (1973) called it a ‘discipline’. What then is understood by the term “discipline”? A discipline can be viewed as the object of study in a university department in a late-twentieth-century university.

This implies that a discipline possesses a specific area of study, a literature, and a working community of paid scholars and/or practitioners (Kline, 1995:3).

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4. This comes from the knowledge of “who or what they are that enables them to know what action will be an appropriate response to the truth of themselves and the world” (Williams, 2001:5)
 5. For a well documented summary of the development of the disciplines as we have come to know them in the late twentieth century, see Kline (1995).

Sugerman and Sulmasy define a discipline as

a department of learning or knowledge, a community of scholars sharing common assumptions about training, mode of inquiry, the kind of knowledge that is sought, and the boundaries of the subject matter proper to the discipline (2001:5).

In essence, the term *discipline* presupposes two modern uses: (i) it refers to a particular branch of learning or body of knowledge, (ii) it refers to the maintenance of order and control amongst subordinate groups.

Shaping knowledge into disciplines can be traced as far back as Greek philosophy. The role of philosophers and theologians can also not be set aside as their disciplines have meditated on life and nature long before modern science was even conceived. The origin of life, the way in which the world works, ethical and spiritual values – all were seen as theological questions,

decidable by reference to the Christian Scriptures and theological explanations by the Church (Kline, 1995:194).

Different denominational attributes were made. Catholic reflection left a long standing written legacy on many aspects such as abortion and euthanasia, while Protestant theologians have contributed to bioethical developments in medical science at a much later stage (Fletcher, 1954; Ramsey, 1970).

The period of Greek rational thought and logic saw thought and discussion as the source of all knowledge. Empirical evidence was nowhere to be seen, and using Aristotle's work as "the truth" in the same way as Scripture was used in the middle Ages, resulted in the formation of "natural philosophy". Natural philosophy was taken to include

all the scholarly knowledge that lay outside theological knowledge (Kline, 1995:195).

This notion of the views of Aristotle and seeing natural philosophy as a single body of knowledge reigned as the ultimate authority for many centuries. It was only at and after the Reformation that Luther and others opened up the freedom for thought of other bases of understanding the world.

During the eighteenth century, science began to take a different course in two ways: First, the rise of more fields of knowledge dealing with truth assertions and second, the use of empiricism as initial step in finding the ultimate arbiter of truth assertions about nature (Kline, 1995:196). Since the end of the nineteenth century, the major disciplines were coming into being.

The disciplines developed in an order that roughly moved from the simple to the complex and from the directly observable to the hierarchically obscure (Kline, 1995:212).

The division of scientific endeavour into disciplines is very much part of our academic culture. Throughout

the twentieth century further specialisation took place that constituted in university departments as we know them. This however, has changed in recent decades as the realization developed that none of the specialised domains contain

the whole human knowledge; nor can anyone provide knowledge that can be used to derive the whole (Kline, 1995:231).

The subtle restructuring of knowledge has either given rise to new disciplines which have internal structures similar to those from which they have differentiated (Hagstrom, 1986:49-50), or taken on a “interdisciplinary⁶” form.

In his 1993 article entitled “The birth of Bioethics”, Albert Jonsen gave a clear overview of how Bioethics matured into a minor form of moral philosophy within medicine, conceived of as a response to the new technologies in medicine, and prompted by the realisation that philosophy does not have all the answers to questions asked by physicians, healthcare workers and patients. This took place within a culture sensitive to certain ethical dimensions and within the need to respond to human rights and the abuse of powerful technologies and institutions.

Mediators came, almost all of them, from the traditional disciplines of theology and philosophy. There were a few physicians, a few lawyers, and an occasional social scientist, but early bioethics was fashioned out of the bits and pieces from moral philosophy and moral theology (Jonsen, 1993:26).

The innovative nature of biomedical science (and Life Sciences in general) is clearly shown as it “moves from observation and discovery” within a social milieu

that demands of scientists constant productivity and consistent originality (Jonsen, 1993:24).

Bioethics grew rapidly and soon became an applied science. A new kind of knowledge was urged to be passed on in order to understand Bioethics and to use it for solving problems not only in medicine, but in a wide range of aspects in the Life Sciences.

Bioethics has benefited enormously not only from the skills and instruments as manufacturing capabilities in technology, but also from the kind of questions thrown up at the forefront of ‘professionals’ working in the fields of Theology, Philosophy, Ethics and Life Sciences. Attempting Bioethics without the hybridisation of knowledge from these and many other disciplines, is ineffective. This is indicated by the following statement of Sugerman and Sulmasy concerning medical ethics:

While philosophical, legal and religious scholarship has traditionally dominated the field of medical ethics, empirical, data-based research with methodological roots in the social sciences has gradually assumed an important role in the field (2001:19).

6. For an extended discussion of the evolution of interdisciplinarity in general, see Klein (1990:22-54)

The relations are not one-way streets, but are matrix-like and involve many feedback links. In bridging the gaps between disciplines, scholars try to work towards a unity of knowledge, a unity that will (hopefully) result from this deliberate search for new “integrative” concepts that allow for treating problems in the most effective manner.

A number of interdisciplinary programs were formed by mergers at the interfaces of two or more existing disciplines and we see more and more existing disciplines working together on common problems, resulting in new and exciting enterprises. However, it was not long before public concern began to demand that scientific endeavours be conducted in ways that not only advance science, but also protect the rights and welfare of human subjects – resulting in among others the development of Bioethics. Before examining the interdisciplinary nature of Bioethics in more detail, it is imperative to briefly revisit the hierarchical nature of the different modes of knowledge, and the importance thereof for Bioethics.

2.3 Hierarchical issues

Defining and delineating the various sciences and the sub disciplines into a hierarchical order belongs to the sphere of the theory of science, and is not a new concept. Aristotle (1947:I. 3-13; 293-239; II. 85-89) organized different modes of knowledge into a hierarchy, according to whether they were theoretical, practical or productive. Quite a few other attempts can also be listed to understand how the different disciplines “fit” into the hierarchy of science. Arthur Peacocke (1993) employs the idea of relating Theology to other sciences by suggesting a “hierarchy of sciences” in which Theology is understood as the science at the top of the hierarchy. In a comprehensive work entitled *On the Moral nature of the Universe*, Murphy and Ellis (1996) propose a hierarchy of sciences in which the higher levels split into natural- and human science branches with ethics (here considered as a science) at the top of the human-science branch. Both theories of a theological and metaphysical nature must be added at the top of the hierarchy, not only to give a complete account of reality (Murphy and Ellis, 1996:19), but because it is seen that these disciplines complete both branches in answering ‘boundary questions’ which go beyond the scope of individual disciplines.

Wildes (2000:182) states the importance of a well-ordered hierarchy or even “a lexical ordering but the common-ground shared by moral acquaintances” in that it will enable secular Bioethics a better critique of its choices of method and procedures. The same argument applies to practising Bioethics from a Theological viewpoint.⁷ It has already been suggested that Bioethics is a complex endeavour.⁸ Murphy and Ellis (1996:37-38) argue that the fundamental way for understanding complex systems is to analyze their structure hierarchically. Recognizing the hierarchical structuring of reality, and the correlative hierarchical ordering of the sciences, will not only result in understanding the evaluation of theories involved, but will also show the importance thereof in the understanding of Bioethics as an interdisciplinary pursuit of knowledge. Understanding the relation of the different levels in a hierarchy, brings not only insight in the explanatory power of the scope of the different theories at their own level, but also into the knitting

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7. By using “Theological” in this apparently monolithic way does not imply that I see this as a singular entity. There are many “Theologies” (e.g. Protestant, Roman Catholic etc.) which has contributed in various ways to the developments to be discussed in this article.
 8. Defining complexity and dealing with Bioethics as a complex system will be treated elsewhere.

together of descriptions and explanations from neighbouring levels in the hierarchy. In distinguishing between pure and applied sciences, they argue that

the pure social sciences are incomplete insofar as they ignore both the issue of ultimate values (ethics) and the need to use the results of social science research in order to manage society (Murphy and Ellis, 1996:79).

Although the significance of the chosen disciplines will be dealt with later, it is imperative to establish a hierarchical model for relating the sciences at this point. By endorsing Murphy and Ellis's viewpoint, viz. that

a single theory of divine purpose answers the ultimate questions arising from each branch of the hierarchy (1996:204).

Their hierarchy can be adapted as follows:

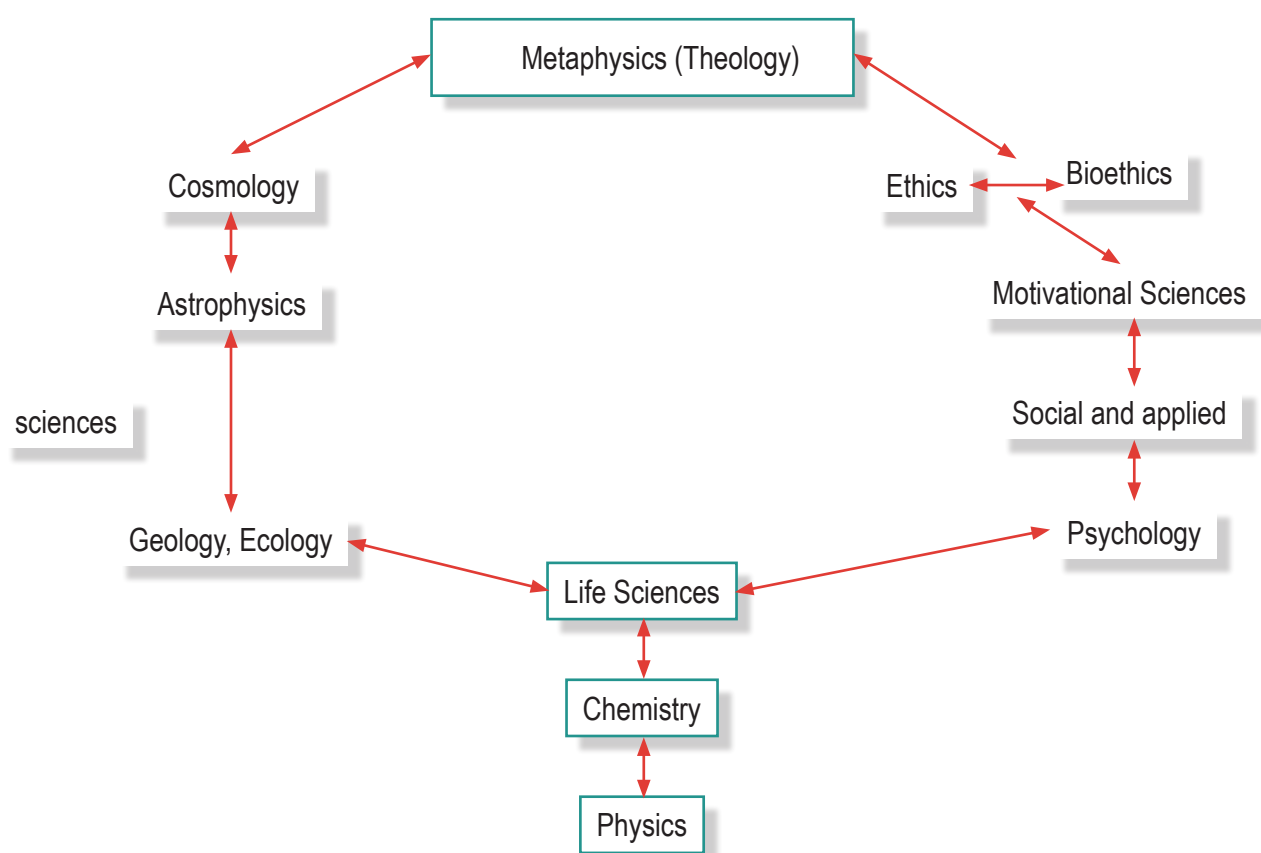


Fig 1: Hierarchy of the sciences, and the place of bioethics therein.

Justifying this system is not the aim of this article, but a few remarks need to be made. When dealing with specific questions in Bioethics, no single piece of evidence or information can be examined in isolation, as

..the combined force of all the pieces is increased, due to the fact that each piece makes one of a variety of possible interpretations of each piece more probable (Murphy and Ellis, 1996:205).

Murphy and Ellis' structure is one in which the relations among the Natural Sciences (for Bioethics the Life Sciences), Social sciences (Philosophy), Ethics and Theology are seen as hierarchically ordered and intrinsically connected. In considering answers provided at different levels, it becomes possible to answer those questions in Bioethics that can be stated as "boundary questions". As will be indicated in §3.2.1, certain aspects of reality require the context as some account of purpose of the whole. Theology brings closure in that divine purpose answers the ultimate questions arising from each level of the hierarchy (Murphy and Ellis, 1996:202). Such a theological account of ultimate reality not only completes the hierarchy, but also clarifies the sense of moral obligation in that it is now not illusory.

This article asks for a more comprehensive development in arguing that answers in Bioethics can be formulated by taking into consideration insights from Ethics, as well as from Theology, Philosophy and Life Sciences. In arguing that the "objective" basis of morality lies in the nature of reality and that the discipline of ethics "can be construed as the scientific study of this moral order" (Murphy and Ellis, 1996:250), this article will try to show that Bioethics moves beyond the disciplinary nature of the contributing disciplines in becoming an interdisciplinary pursuit of knowledge within this hierarchical system.

3. The interdisciplinary nature of Bioethics

3.1 Defining interdisciplinarity

Interdisciplinarity emerges in response to problems defined in terms of the disciplines. It usually advanced as a way of enhancing the disciplinary pursuit of knowledge of reality or the comprehensive application of disciplinary knowledge as manifested in practical problems. The modern form of interdisciplinarity is often presented in the context of a critique of the disciplines and do not significantly mediate the disciplinary pursuit of knowledge of reality (Mourad, 1997:135). In the postmodern context interdisciplinarity will not only have the goal of creating intellectually compelling pursuits of knowledge that are different from those as given in the disciplines, but also consist of creating a 'new object' (1997:136). In this case, 'doing' Bioethics is being able to practice ethics in a new context – a context of dealing with ethical problems arising from new and sometimes revolutionary and controversial developments in the biomedical sciences and the advancement of biotechnologies that outpaces morality. We therefore see that most of the interdisciplinary programs were responses to the demands of praxis: not only to the immediate service to interested clients, but in the case of practising pastors/ministers to members of their congregation who are confronted with these issues in their daily lives.

According to Klein (1990:11), scholars turn to interdisciplinary work in order to accomplish a range of objectives, viz. to answer complex questions; to address broad issues; to explore disciplinary and professional relations; to solve problems that are beyond the scope of any single discipline; and to achieve unity of knowledge, whether on a limited or grand scale.

Interdisciplinary activities are rooted in the ideas of unity and synthesis, evoking a common epistemology of convergence in which there is a conscious attempt to integrate material from various fields of knowledge into 'a new, single, intellectually coherent entity'. This not only demands an understanding of other disciplines, but in a team effort, requires building a common vocabulary.

Interdisciplinarity is ... a process for achieving an integrative synthesis, a process that usually begins with a problem, question, topic or issue (Klein, 1990:188).

It can suggest forging connections across the different disciplines; but it can also mean establishing a kind of undisciplined space in interstices between disciplines, or even attempting to transcend disciplinary boundaries altogether” (Moran, 2002:15).⁹

Taking interdisciplinarity to mean any form of dialogue or interaction between two or more disciplines, it is always transformative – producing new forms of knowledge in its engagement with discreet disciplines. Seeing it in this way, it is much more than just simply bringing different disciplines together. When interdisciplinarity is able to form part of a more general critique of academic specialization as a whole, and of the nature of the university as an institution that cuts itself off from the outside world in small enclaves of expertise, it assumes existence and relative resilience of disciplines as modes of thought and institutional practises (Moran, 2002:16-17).

This article views Bioethics has having developed as an interdisciplinary field with methodological and epistemological input from many different disciplines, including medicine and law, philosophy, theology, life sciences, the social sciences (e.g. sociology, anthropology, economics), and many others. This discourse of interdisciplinarity supports the notion that input from different fields can expedite and improve the analysis and solution of particular problems. However, Borry et.al. (2005:54) rightfully states that interdisciplinarity does not always guarantee better results but also has drawbacks. They identify the biggest difficulty that interdisciplinarity carries, as the intrinsic gap between the conversing disciplines. This gap can cause miscommunication, which may involve speaking “past” one another, cognitive and conceptual dissonance, different cultures and styles, a structural lack of background and knowledge to judge or criticise the research results of another discipline etc. The interdisciplinary gap can result in opposing objectives that limit the conversing disciplines in their interaction, and need to be addressed.

It is now possible to give an extensive definition of Bioethics in defining it as an interdisciplinary concept: the interdisciplinary study of issues not only concerning life in general or health care, but also including environmental issues of the day. It involves an attempt to discover normative guidelines and moral reasoning for decision-making skills built on sound moral foundations informed by disciplines not only from the Life- and Social sciences (cf. Silber, 1982:21; Pellegrino, 1997:2; Rae and Cox, 1999:viii; Grodin, 2001:7), but also from Theology, Philosophy and other disciplines not dealt with in this article. As already been indicated by the discussion on hierarchy, and contra Sugarman and Sulmasy’s (2001:6) notion that meta-ethical questions are more part of ethics in general, the importance of metaphysics/theology for the interdisciplinary field of Bioethics will be emphasized.

How exactly are these disciplines brought together, transformed and transcended in different forms of

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9. “[Interdisciplinarity] forms part of this traditional search for a wide-ranging, total knowledge; ... it represents a more radical question of the nature of knowledge itself and our attempts to organize and communicate it. In this sense, interdisciplinarity interlocks with the concerns of epistemology - the study of knowledge- and tends to be centred around problems and issues that cannot be addressed or solved within the existing disciplines, rather than the quest for an all-inclusive synthesis” (Moran, 2002:15).

interdisciplinarity, and what new forms of knowledge are created by these interactions? As the field of Bioethics matures it becomes increasingly important to re-examine and revisit the theoretical foundations asking questions such as: What is the scope of Bioethics; How can Theology, Philosophy or the Life Sciences inform bioethical theory and practices? Does Bioethics have a unique or demarcating body of knowledge, methodology or philosophy?; and what are its theoretical assumptions?

In order to answer some of these questions, and to try and indicate how different methodologies relate to one another in order to show the true interdisciplinary character of Bioethics, three dominant disciplines related to Bioethics, viz. Theology, Philosophy and Life Sciences will be considered.

3.2 Relating Bioethics, Theology: Philosophy and Life Sciences

The Bioethical movement of a few decades ago was born and shaped by both Theology and Philosophy.¹⁰

Each brought a distinct tradition and perspective, together with analytical skills sharpened by their disciplines. Together they produced an amalgam of ideas, methods and educational structures that become bioethics. But ... the field was interdisciplinary (Borry et. al., 2005:50).

For Pellegrino, Bioethics has been the interdisciplinary relation between the abstract and the particular.

The moral life, itself, involves essence and existence, the universal principle and the particular case, cognition and affect, experience and abstraction of experience. Imbalances between the realms of the abstract and the concrete can distort the enterprise of bioethics (Pellegrino, 1997:6).

As has been already indicated, the praxis of ethical enquiry is the essence of Bioethical problems. In order to understand the problem, one must be open to all relative perspectives on those specific problems.

These perspectives are conditioned, at the very least, by the questions asked, the matters of interest upon which the discipline is focused. These concerns can be judged to be intrinsically important, simply interesting to the philosopher, or highlighted in a culture (Pellegrino and Thomasma, 1981:43).

This article considers problems in Bioethics as part of the last category, and will add to it insights in Theology and Life Sciences.

Alasdair MacIntyre (1988:349-350) provided a proposal that we adopt a picture of moral inquiry as

10. For an extensive introduction to the history of Theology and Philosophy in ethics and bioethics, see Troost (1983).

tradition-constituted. His ideas provide an alternative to the contemporary way of conceiving Bioethical conduct. In inquiring bioethical concepts from a tradition-constituted way, inquirers do not attempt to stand outside particular moral positions speaking to all parties, but rather speak from within traditions from which they live their lives. When dealing with Bioethics as praxis, one must take into consideration that it is fundamentally socially constructed (Farmer and Campos, 2007:25).

In trying to justify the focus on a discipline from the social sciences in this argument, it is necessary to critique the assumption that most ethicists do not associate social science with ethics other than in the somewhat arbitrary distinction between normative and descriptive ethics. Nelson (2000:12-17) not only questions this assumption, but also questions the presumption of a linear relationship between ethicists and social scientists, in which the latter provide the data upon which the former makes judgements: "Moral theories, informed by facts, judge practices". He argues instead for an interactive model between the two. Haimes (2007:36) states the potential for a fruitful collaboration between bioethicists and social scientists "in the fact that bioethics is no longer purely an abstract discipline since there is a growing interest in conducting empirical investigations and within philosophy more broadly, with applied work". A clear understanding of each others' perspectives on the same issues of substantive interest would therefore be of mutual benefit. Nelson (2000:14) suggests that the social sciences might mount an implicit challenge to bioethicists in asking why they attend to the question they do and "even whose interests they think it appropriate to serve". The interdisciplinary role that philosophical ethics plays can be seen as interdisciplinary and cooperative in order to help Bioethics retain its philosophical identity.

There are empirical data relevant to almost every debate and every decision that has to be made that takes place in the field of Bioethics, which is logical "because the empirical publications reflect theoretical debates that are currently being held in the field" (Borry et al., 2005:51-52). This empirical data do not come from Life Sciences alone, but there are more and more empirical methodologies applied in both Philosophy and Theology.

What then, is the contribution that Theology, Philosophy and Life Sciences can make to Bioethics?

3.2.1 Theology

Relating Bioethics and religion and Bioethics and Theology specific are not always without problems (Merril, 2009; Engelhardt, 2002). This article will focus on Christian Theology as a relational enterprise in shaping interaction not only between humans, but also between humanity and our physical reality.¹¹ Within the Reformed tradition, this relation to the God of Christian faith is the subject matter of Theological ethics.¹² Schweiker (1995:51) sees the purpose of Theological ethics as "transforming and reconstituting how we understand and intend our lives as moral beings in the world with other". For Engelhardt, (2002:106-107) the character of moral Theology takes on a different sense once it is recognized that "theology rests primarily in an experiential encounter with God, which ... remained

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11. The literature in other religious traditions other than the Christian tradition is also growing (Sullivan, 1989; Green 1985; Novak 1990; Davis 1991; Newman 1992; Gellman 1991; 1993; Fasching, 2001).
 12. Hauerwas (1981:144) reminds us that we must incorporate the variety of relational claims being made on us when we sort out "conflicting loyalties". We do this through the narratives of the lives we live.

unaltered...”. This has resulted in a methodological core in which the spiritual disciplines transform the human heart and open it to an experience of God which influences our relation with reality.

The role that prominent theologians have played in the development of medical ethics as the forerunner of Bioethics, has been well documented (Walters, 1985; Smith, 1996; Cahill, 2001: 49 – 52). Although Kuhse and Singer (2006:5-6) see ethics as independent of religion, they do not deny that theologians may have a role to play in Bioethics (cf. Pellegrino, 1997:7). This article makes a clear distinction between religion and Theology, and takes Theology as a critical reflection on the ultimate causes and meanings of human experience. That reflection, however, is qualified by a belief in God in which reason is enlightened by faith, revelation or religious experience (MacQuarrie, 1980:47), and within a specific religious tradition. This relation encompasses the whole of human life. In a brief account on Thinking Theologically about Bioethics, Madueme (2004) defines Theology as canonical faith seeking practical understanding. He argues for applying the Scriptures within a new context – reflecting on difficult bioethical problems that cannot take place in a theological vacuum. Practicing Bioethics and taking Theology seriously, is not only about thinking and speaking and living according to Scripture, but taking into consideration new contexts and changing cultures within which the Bioethical problems are dealt with.

Alisdair MacIntyre identified three tasks for theologians writing on medical ethics – the first two are still relevant for contemporary Bioethics:

First – and without this everything else is uninteresting- we ought to expect a clear statement of what difference it makes to be a Jew or a Christian or a Muslim, rather than a secular thinker, in morality in general. Second, and correlatively, we need to hear a theological critique of secular morality and culture (1979:435).

The third task can be formulated as that we have to take into consideration the bearing of what has been said under the first two headings, and the importance thereof in reflecting on the specific problems which arise from contemporary Bioethics. Everybody involved in Bioethical reflection ought to expect theological presuppositions to be declared and defended where they are operative. Taking into consideration that this takes place within a specific religious tradition, and within a specific contemporary culture, Van Huyssteen’s (2001:67; cf. also Murphy,1996:109) concern is echoed in that he asks if it is

fair to ask what special link this may open up from any form of interdisciplinary rationality [and if it] could be credibly achieved: an interdisciplinary rationality that might finally support the claims by at least some in the theological epistemic community for a public voice in our complex, contemporary culture (Van Huyssteen, 2001:67).

When he further asks if it will still be possible for Theology to join other modes of knowledge and reasoning strategies in some form of interdisciplinary public discourse within the context of a radical pluralist world where epistemological foundationalism has been so successfully deconstructed (Van Huyssteen, 1999:213). This article argues that the possibility of a provisional “yes” does exist.

What then, is the relation between Theology and Bioethics? What are we to make of theologians and clergymen who speak in the name of Theology without having specialist knowledge in other relating

fields? In order to gain the effect of relevance, theologians must refer back to, and ground their bioethical arguments in religious claims – in the case of Christian Theology, the texts of the Judeo-Christian Scriptures, the writings of the Patristic Fathers¹³, the creeds, and the rich body of writings from the Reformation, the post Reformational era and especially the “post-holocaust” twentieth century theology.

The Christian tradition in particular holds that Holy Scripture is divinely inspired and that the writings of the Fathers¹⁴ breathe the inspiration and enlightenment of the Holy Spirit. This guarantees a firm approach to contemporary bioethical issues if one attempts to shed light on them from the viewpoint of [the] patristic mindset (Griniezakis and Symeonides, 2005:11; cf. also Murphy, 1996:109; Schweiker, 1995:92).

Its rich literature could be used to help formulate answers to bioethical problems. Cahill (2006:40) states an important fact by emphasizing that theologians must be willing to agree that even positions inspired by religious commitment, have to be ‘translated’ into moral terms. Terms that can be accepted not only from within a particular tradition, but formulated in such an order to have public viability. Different theological themes can be transposed in concepts such as the Kingdom of God, hope (cf. Moltmann, 1967), re-creation (Ridderbos, 1973:223), *Imago Dei* (Berkouwer, 1957:34, 95, 391; Barth, 1961:116; Moltmann, 1993:221, 216), eschatology, covenant,¹⁵ etc. This article takes the covenantal aspect as being of particular importance in that our understanding of moral situations are understood in this special relation to God. It specifies the norms and values for how we live in having bearing on specific moral judgements. Smit (1991:277-282) adds a doctrinal and religious perspective on covenant as of utmost importance for Christian ethics. “It leads to and *ethics of responsibility*”¹⁶ (1991:277, his italics) - an ethics for a public church in a civil society. The covenantal perspective suggest that a relation with a “radically transcendent God” (Engelhardt, 1999:203) will have a particular impact on our understanding of Bioethics in reality. Theology may not deny the burning issues of this reality.

Seeing Theology as not only viable, but as indispensable as a conversation partner in the realm of public Bioethics, is underscored by different scholars (cf. Murphy, 1996:109; Pellegrino, 1997:7; Cahill, 2006:54-55). In *The Contributions of Theology to medical Ethics*, Gustafson (1975) points out that Theology can help establish a ‘moral point of view’ from which certain attitudes such as an attitude of respect for God and for human life, as well as an attitude of responsibility for creation that is not closed to new possibilities and dispositions, inform the debate. Theology’s presence in the bioethics discussion helps inform the fullness of the faithful about contemporary biotechnical achievements. For Griniezakis and Symeonides (2005:11) it means practically that the faithful can participate in various achievements, and in various developments of life that do not offend human nature. However, a Theology that produces

13. From Clement of Rome (fl. 96) till Maximus the Confessor (c. 580 – 13 August 662).

14. The title ‘Father of the Church’ refers to and describe the orthodox champions of the church and exponents of its faith. The writings of the Fathers not only fills the gap in historical knowledge between the New Testament period and the latter part of fourth century, but also formulated the Creeds to give accurate statements of faith. “Hence, the Fathers are of tremendous value in the study and development of Christian life and thought ...” (Cairns, 1996:74).

15. The principle of covenant in Bioethics is understood in different ways. This is well manifested in the Bioethics of Ramsey (1970), R. Veatch (1981) and W.F. May (1977). See also Barth, 1961:116, 344.

16. Schweiker (1995) developed a theory of responsibility from a specifically theological viewpoint He hereby makes clear the significance for Christian commitment of reflection on moral responsibility.

fewer terms of reference, fewer aphorisms, and fewer restrictions will be much more beneficial to our postmodern society.

Theology must produce challenges for working out decisions, not of religious, but of theological character. Furthermore, theology will play a determinative role in the cooperation between bioethics and other theoretical sciences. Theology can stand as the binding link for these sciences (2005:11).

The potential value Theology has for Bioethics is also of practical value in that it can provide meaning to life, experiences of pain, suffering and death, and an understanding of our role in the preservation of life on earth as we know it. Gustafson (1975:25-54) unpacks this value further by indicating that:

1. Theology gives an answer to the question: “Why the moral?” For Christian Theology the answer will be because “God intends ... that human action conform to His purposes and activity for the well-being of creation” (1975:25);
2. Theology includes hamatology which is a reminder of human finitude (sinfulness) which implies both a need for continual self-criticism and the impossibility of certitude in moral affairs; and
3. Theology can give some clues to the understanding of what is moral: morality is not simply human, but has a greater-than-human foundation creation is basically good, non-human creation is good and must be respected; whatever threatens the well-being of creation must be condemned; and creation is full of new possibilities for further development.

In arguing for a legitimate place in our scientific endeavours for a Christian theological Bioethics, the task of such an ethics would include not only the three concepts of Gustafson as indicated above, but will also include investigating real-life bioethical issues in the context of all the role-players in order to become more conformed to Christ and to be the stewards of creation that God has intended us to be.¹⁷

There are however, others who disagree and argue that Theology has nothing to offer Bioethics. As far back as 1979 Alasdair MacIntyre already stated that

Theologians still owe it to the rest of us to explain why we should not accept their discipline as we do astrology or phrenology. The distinctiveness and importance of what they have to say, if it is true, makes this an urgent responsibility (1979:435-443).

Recent developments have also seen a slight distance between Theology and Bioethics – a situation that Madueme (2004) regrets.

17. The distinctive way in which Hauerwas (2001:51-74) do theological ethics can be indicated as a more confessional approach. He not only reframes the ‘significant questions’ for doing theological ethics, but centers his approach on the life, death, and resurrection of Jesus Christ as witnessed to the church.

In concluding on the role Theology can play in Bioethical conduct, this article takes the stand that it must be done in the light of Theology's aim to

seek to confer not only knowledge of the divine will but also the wisdom to make the right choices and to live lives conformed to God's good and perfect will (Polkinghorne, 1998:129).

It can provide structural elements to guide clergy and congregation members through the maze of insights and taking a moral stand on practical problems.

The development of an understanding of Bioethics in which Theology is inescapable, will achieve several vital results. First, it will free Bioethical practitioners from the notion that they must practice a secular Bioethics; secondly, relating Theology and Bioethics in an interdisciplinary way can help secure a better understanding of all created reality; thirdly, Theology's specific norms can be applied consistently and comprehensively to new and complex situations; and finally, it will address the context of the whole in illuminating our understanding of reality with Philosophy and Life Sciences.

Sound bioethical arguments will be those that cogently demonstrate the connections between premises and conclusions, and the bioethicists must have command of not only the theological tradition that provide these premises, but must also take on the challenge to justify epistemological claims and in doing so complete the body of scientific knowledge at a higher level. The character of the tradition in which this choices have to be made, will not only have an impact on the arguments one offers, but will also indicate the relation between the knowledge one has and the moral choices one makes.

3.2.2 Philosophy

Cicero called Philosophy the *dux vitae*, the rational guide to life. The very nature of Philosophy as a science of totality is to provide us with general insights and concepts. Pellegrino and Thomasma define Philosophy as

the fundamental understanding of ... a structured dialogue for the purpose of critical understanding. Put another way, philosophy is a disciplined, critical reflection following logical rules (1981:39).

Everyone who searches understanding can be called a philosopher. In order to complement the narrative of modern philosophy (an inadequacy identified by Capaldi, 2007), one first needs to identify a starting point. This critical measure

...will determine the language of that philosophy, its concerns, and its impact (Pellegrino and Thomasma 1981:44).

This starting point will dictate the tools used – whether it is analysis or synthesis. In choosing how and why Philosophy can contribute, this article agrees with the characteristics of a philosophy of practice as set

out in Pellegrino and Thomasma (1981:54-56), and will try to indicate in what way it can also be applied to an interdisciplinary relation to Bioethics. This will include:

1. describing what is important about matters of fact. This will clarify the starting point for such a philosophy;
2. radical reflection – where thinking is at a critical distance from the reality one works with. What makes this important for arguments in bioethical issues, is that the product of the activity is important;
3. critical reflection – this function searches for its ground or condition of possibility in the real world of experience; and
4. practical reflection – the attempt to apply the ontology of practice to bioethical and policy issues.

Moral philosophers should help us discuss moral questions rationally. The prime task of Philosophy is the critical study of arguments; and the prime task of moral philosophy is the critical study of moral arguments. Moral philosophers therefore should not only help us discuss moral questions rationally, but must teach us how to tell good arguments from bad ones. In this task ethical theory, which reveals the logic of the moral concepts, is an essential tool (Hare, 1997:44). By constantly revising those theories that are proven inadequate by concrete experiences and circumstances, Philosophy's role can provide the critical resources of ethical theory and methodology in Bioethics. It is important to choose the philosophical method that can best achieve the objectives of Bioethics considered as "applied ethics" or "practical ethics". Philosophy does and can enter into an interdisciplinary dialogue about controversial issues with Bioethics, Life Sciences, and Theology. A contemporary philosophy of Bioethics is thus desirable, even mandatory because of the increasing complexity of our physical reality. The fundamental methodological issues associated with this complex interrelationship still need to be clarified. Many bioethicists however do regard philosophy as inadequate to encompass the complexities of moral life.

They deem philosophical ethics to be overly rationalistic, abstract, and insensitive to the contextual, experiential, and pluralistic milieu of actual moral choice (Pellegrino, 1997:2).

The primary role Philosophy plays in the interdisciplinary enterprise of Bioethics lies in that it provides the analytical and normative components of our Bioethical actions.

3.2.3 Life Sciences

The problem that we are faced with is well defined by Sugerman and Sulmasy when they state that

...the mere fact that something is biologically true does not entail automatic conclusions (2001:9).

When considering the role Life Sciences play in the interdisciplinary enterprise of Bioethics, it is not the intention of this article to state that biological-, medical- or environmental knowledge will provide clear moral truths. The position it takes is more that a biological premise, a medical fact, or that of

any other scientific discipline, informs the imagination and reasoning of the ethicist in such a way that decision-making is guided and elucidated by facts and values taken into consideration when arguments are constructed in decision-making. Distinction must be drawn between relevant information, and facts that are just interesting to know.

Biomedical choices thus involve multiple disciplines and multiple methodologies.¹⁸ It is a true interdisciplinary and dynamic field in which interaction from multiple disciplines, traditions and theoretical foundations ask for more than just general reflection.

The claims of interdisciplinary interaction between all these disciplines must be tested by standards of moral theory that are useful for the task. But whose morality, which method, and which theory?

4. Method and interdisciplinary Bioethics

In a collection of papers published in 1997, Carson and Burns claim that the contributions made are evidence that methodology is a continuing and important preoccupation within Bioethics. The complex interdisciplinary character of Bioethics asks not only for many methods to be taken into consideration, but also for a methodology that is sensitive to these complexities.

A survey of the literature on the methods used in Bioethics indicates a wide variety of approaches. The work of four representative authors' covering the scope of methodological diversity in the field will be briefly reviewed.

In his book *Moral Acquaintances: Methodology in Bioethics*, Wildes (2000:17; 92; 173) warned that a narrow focus on any one aspect of complex moral questions often creates interminable debates. He argues for a middle ground in this moral morass that neither imposes a particular methodology, nor retreats into differential relativism. He contends that the choice of methodology is crucial because the acceptance or rejection of initial premises shapes both the content and the resolution of the issues at hand - it will not only lead to sophisticated discussion but also better define the field of bioethics. For Wildes the choice of method not only directs in advance the activity of knowing, but also the content that is to be known. For him excellent descriptive research in medical ethics specifies the theoretical framework particular to the empirical discipline, and explicitly designates the ethical theory that under girds the research. The common ground of moral acquaintances and the context of the moral issue at hand are identified by methodological reflection in Bioethics. Foundational - and principlism methods oversimplify the complexity of moral issues. In order to navigate between absolutism and relativism, Jonsen and Toulmin suggest that we begin with cases and problems, not with theories or general principles (1988:10).

18. There are even conflicting methodologies and perspectives which complicates the problematic interdisciplinary dynamics between these even more. For obvious reasons this is simplified by using the term "Life Sciences".

DeGrazia and Beauchamp (2001:31) argue that the ambitions of methodology is to provide a procedure or method (1) for producing such a normative framework, (2) for using such a framework once it has been identified, or (3) for navigating the complexities of moral life in the absence of such a framework.

Douglas Strum (in Shelp, 1985:135-162) argues that concerns regarding methodology ought not to be overlooked as scholars go about the business of addressing urgent issues. He proposes three methodological questions for Bioethics: questions of scope, focus and grounding. For scope its basis is in a 'perception of social reality', and is defined as a 'range of issues appropriate to the discipline'. Focus on the other hand determines importance and centrality—structural social science. Grounding is split into 'popular' and 'philosophical-theological' understanding of the foundation of bioethics. Theological interaction will address physical and spiritual needs.

Several methods of philosophical medical ethics can be regard as 'prominent'. Sugarman and Sulmasy (2001:32 - 41) focus on five: (1) tradition and practice as a source of norms in medical ethics; (2) principles, common morality, and specification as the basis of medical ethics; (3) ethical theory as the backbone of "applied ethics"; (4) the use of biomedical cases and their ethical implications; and (5) reflective equilibrium as a technique. Other methods include feminist analysis on issues of medical ethics (cf. Holmes and Purdy, 1992; Sherwin, 1992; and Wolf, 1996); considerations of virtue as a form of guidance in medical ethics (cf. Shelp, 1985); narrative ethics as basis for medical ethics (cf. Nelson 1997); and pragmatist approaches to medical ethics (cf. McGee, 1999). Still – choosing philosophical methods to best achieve the objectives of "applied ethics" or "practical ethics", remains controversial (Sugarman and Sulmasy, 2001:31).

Given this myriad of methods, how then should we go about solving concrete complex bioethical problems? Can we develop a methodology that finds an interdisciplinary interaction to which Theology, Philosophy and Life Sciences contribute? The underlying concern is that we can get "stuck" on abstract theorizing. Taking into consideration the resources and techniques available in these disciplines can help us find a justifying role not only for bioethical principles, but taking into consideration the contextual feature of a particular case, the theological context, and the "hard" facts provided by Life Sciences, medicine or the environmental sciences.

One solution would be to explore the way Van Huyssteen (1999; 2006) integrate the complex issues surrounding the claims of Theology and science in general to rationality by setting them into the context of postfoundationalism as a viable mode of interdisciplinary conversation.¹⁹

4.1 Setting the stage for an interdisciplinary methodology

19. In his book *Alone in the World* (2006), Wentzel van Huyssteen opts for an evolutionary epistemological approach in which postfoundationalism opens up the space for transversal reasoning (following Calvin Schrag). For a discussion of the possibility for a postfoundational space for interdisciplinarity, see de Lange (2007).

The role of theory in Bioethics has been scrutinized from many different angles. The traditional approaches of consequentialism, deontology and the principlism of Beauchamp and Childress, are unsatisfactory when dealing with aspects brought about by new technology. One reason can be that

while most traditional ethical theories in bioethics focus on the individual, genetics is concerned with relatedness (Almond, 1995:126).

This is not only valid for genetics, but for most problems dealt with in Bioethics. Callahan (1996:9-17) pleads for an ethical theory capable of both being applied to practical problems and of being embodied in the life of the theorist. Because of the institutional isolation of professional philosophy from the real world in which ethical problems are embedded, he expresses scepticism in that they will never be able to satisfy both these requirements. As argued before, Theology can fill this void in bringing into the interdisciplinary context a theoretical aspect concerning relatedness to all agents involved.

4.2 Differentiation in ethical theories

DeGrazia and Beauchamp (2001:31) indicate the ambition of ethical theory in so far it attempts to provide an adequate normative framework for addressing problems of moral life. Ethical theory may also be defined as the process by which we justify a particular ethical decision. It has already been indicated that each theory needs content and a method by which it can be applied to specific moral cases and dilemmas (Wildes, 2000:27). Therefore, in order to move forward as a scientific enterprise, Bioethics must and should pay attention to ethical theory, theological context, philosophical foundations and methodology in studying the nature and justification of general ethical principles applied to contemporary special moral problems. This it is a means by which we organize complex information and competing values and interests.

Three forms of ethical inquiry are identified by philosophers - each revealing different parts of the truth about morality: firstly, metaethics as

the branch of philosophical or theological inquiry that investigates the meaning of moral terms, the logic and linguistics of moral reasoning, and the fundamental questions of moral ontology, epistemology, and justifications (Sugerman and Sulmasy, 2001:3-4).

Analysis is made of the meaning of central terms in ethics, structure or logic of moral reasoning, the nature of moral justification, and inferences. Secondly, normative theory which is involved in philosophical or theological inquiry that sets out to provide answers to substantive and normative questions in a systematic, and critical fashion, and to justify such answers. Contractualism shows the choices made as grounded in reasonableness and fairness, consequentialism in which the choice of moral principles is self-interested, while deontology holds that what is morally right or wrong is not determined at the level of analysis, the level of praxis, or that which would promote the best outcome. Virtue theory which is narrowly associated with Aristotle and is concerned primarily with character rather than conduct. Thirdly, descriptive ethics where factual description and explanations of moral behaviour and beliefs are dealt with and in which empirical questions are asked.²⁰

4.3 Interdisciplinary Bioethics

What is important for interdisciplinarity in Bioethical practices is not only that the different disciplines and methods should relate to one another, but that chosen theories must and can support one another. That is, a theory that

may be inserted as an auxiliary hypothesis into another (Murphy and Ellis, 1996:227).

This is especially important for Bioethical enquiry in which theological perspectives are taken seriously, as connections or clashes between doctrines are often a more important source of corroboration or of anomalies than are the data. Another important notion for Bioethics is ‘practibility’ (Beauchamp and Childress, 2001:340). They claim that when a theory is not practically realizable, it is not an acceptable moral theory, implies complementarity from the outset. While different disciplines ask *different* questions, fruitful interdisciplinary interaction asks for *corroboration*.

In moving towards the development of a methodology that attends adequately to the organizational and institutional settings as a basis for decision-making within Bioethics, it was indicated that the interpretation of knowledge and foundational theories from several disciplines need to be dealt with in an interdisciplinary discourse in order to function optimally. So as to come to workable interdisciplinarity in Bioethics, the relations between disciplines, the way in which different theories complement one another, the distinctive viewpoints from each discipline views practical bioethical problems, and the complex nature of Bioethics need to be addressed.²¹

5. Conclusion

At the outset of this article, three questions were asked, namely what is the place of Bioethics within the hierarchy of disciplines? In what way do Philosophy, Theology, and Life Sciences contribute to the theoretical foundations of interdisciplinary Bioethics? And, how do different methodologies relate to one another in order to show the true interdisciplinary character of Bioethics?

In answering the first question, the relation between moral knowledge and theoretical knowledge was investigated, and it was concluded that answers to complex practical Bioethical problems move beyond the disciplinary nature of Theology, Philosophy, Life Sciences, and Ethics for that matter individually. Answers can only be formulated by taking an interdisciplinary stance when moving between the

20. Beauchamp and Walters (2003:12- 20) also distinguish between the following ethical theories: Utilitarian theories; Kantian theories; Contemporary challenges to the traditional theories; Virtue ethics; the Ethics of care and Casuistry. The latter subject is beyond the scope of this article.

21. This will be attempted in two follow-up papers dealing with Bioethics from a Reformed perspective, and Bioethics as complex system.

different levels of knowledge acquisition in the disciplines. This corresponds to scholars views such as Murphy and Ellis, viz. that social systems involve complex interactions and that Bioethical decision-making process/es are also therefore culture- and tradition dependent. Bioethics as an increasingly specialized domain is moving towards a more complex system and is therefore more and more difficult for human comprehension.

In answering the second question, the contribution of the theoretical foundations of Theology, Philosophy and Life Sciences in interdisciplinary Bioethics were investigated. It was clear from the outset that scholarly, scientific and technological knowledge alone cannot guide us in making objective decisions. Involving knowledge frameworks of the human and social sciences, recognizing the Word and Spirit of God, and taking seriously Philosophy as a foundational discipline, could assist people from a specific religious tradition in arriving at informed bioethical decisions on difficult bioethical problems. Although theological understanding of Bioethics seeks to deal not only with physical needs, but also spiritual needs, its truths cannot be bound by criteria of clarity and certainty because it is clear that moral knowledge grows in a relation to God and that in this relationship, we can understand ourselves in relation to reality. Life Sciences on the other hand, are clearer and more certain as these describe an empirical understanding of reality. However, both Theology and Life Sciences bring their distinct insights to bear upon human situations through Bioethics.

The third answer is that Philosophy urges the Bioethicists to ensure that metaphysical foundations are sound and clear in order to contending other epistemic claims in a charitable and methodologically sound manner. The main purpose of a theory is indicated as providing consistency and coherence in our decision-making endeavours. In a postmodern, relativist age, each discipline discovers some discrete aspect of our reality helping to illuminate and resolving real Bioethical problems in a real world. The challenge of giving reliable bioethical advice will therefore be to create an interdisciplinary space in which Ethics does not only rely on Philosophy, its parent discipline, but one in which it must also take into consideration its metaphysical hard core: the claim about the ultimate purpose or goal of human life and our created reality.

In developing a methodology that attends adequately to the organizational and institutional settings for decision-making within Bioethics, it is clear that Bioethics is a complex endeavour served by many disciplines, as well as complex interdisciplinary form of knowledge. All must learn to transcend the barriers between the multitude of interrogational disciplines and endeavour to design a well-argued, and meaningful framework within which methodology has been clarified: not only the theoretical grounding thereof, but one that also recognizes the complex interdisciplinary nature of Bioethics. This will be the focus of subsequent research.

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