

Why Science Matters to Theology

Alan P. Williams

Abstract

Research across disciplinary boundaries is a common feature of contemporary academia. Historians scrutinize the works of anthropologists to gain insight into the past and literary critics consult works by sociologists to understand the social context in which novelists write their narratives. Contemporary Christian theology is also marked by its willingness to transcend disciplinary borders to help deepen its understanding of God. Theologians can be seen working in tandem with philosophers or psychologists to help clarify and solve problems that are of mutual concern. The theological rapport with science is another fast-growing trend to the surprise of those who conceive them as mutual enemies. In addition to studying the Bible and the works of the early church fathers for theological insights, more and more theologians are closely examining the discoveries and methods of science to aid their theological work. The apparent value of science for theological inquiry seems a little odd. Science has to do with quantitative measurements and empirical data whereas theology concerns itself with purpose, meaning, and value, among other things. There seems to lack any overlap that makes meaningful dialogue possible. But the dialogue between theology and science is flourishing and shows little sign of abating. Instead of actually engaging in this dialogue, the present study aims to distance itself a little from this intellectual engagement and pose a fundamental question that is not often addressed by the participants, namely why science matters to theology.

Introduction

Interdisciplinary studies are not only endemic but indispensable in contemporary research. Researchers from different fields of inquiry come together and share what they know and understand because of their joint

concern for expanding our understanding of ourselves and the world. Scientists make extensive use of mathematics when formulating and articulating their theories and philosophers often appeal to the works of logicians when defending and critiquing philosophical theses with precision and clarity. Disciplinary matrices are regularly crossed because research problems are not usually confined to any one particular discipline. The nature of the human brain is not only a concern for neurologists who seek new remedies for neurological disorders, but it also draws the attention of those involved in education because brain studies can help illuminate how we store information and how emotional distress affects our mind. Research also spans different fields of inquiry because the solution or elucidation of problems requires the expertise and knowledge of researchers with different theoretical backgrounds. The potential causes of social inequity, for instance, are manifold and complex, extending from socio-political and economic to psychological and philosophical factors. To help reduce the unfairness found in society, we need the theoretical insights of sociologists who probe the in-built structures of social arrangements that give rise to inequality and psychological studies that uncover why people in general turn a blind eye to the sufferings their neighbors have to endure on a daily basis.

Contrary to the popular stereotypical preconception that supposes theology to be an insular endeavor unaffected by the findings established by other disciplines, theological investigations also share the interdisciplinary quality of much current research. Theologians, along with psychologists and philosophers, appeal to different areas of specialization to address the issues that concern them. Historical studies are examined in order to gain a clearer picture of the historical context in which Christ lived and died and the works of psychologists are of great interest to those wanting to understand the neuroses and illnesses that typify the secular age we live in. Because an

unbiased and accurate reading of scripture that is faithful to the will of God is paramount for leading a religious life, theologians are rightly keen to learn about the hermeneutical principles expounded by literary critics that should be followed when interpreting texts written in the distant past. Theology has also borrowed and refined the concepts and categories found in the philosophical literature to reformulate the central doctrines of faith in a more understandable form and the philosophical arguments for and against the existence of God have engaged theologians wanting to defend and justify their faith in a transcendent being. Theology, unlike what many are inclined to think, doesn't work in isolation, unaware of matters pursued in other subject disciplines.

The contemporary theological scene also testifies to an increasing engagement with science. Theologians attend closely to the latest empirical findings unveiled by telescopes and microscopes. From modern cosmology that takes us back to the primordial conditions and processes that have helped structure the cosmos to evolutionary biology that traces the origin and evolution of species through the process of natural selection and genetic mutation, a lot of theological work is devoted to understanding and drawing implications from what science has to teach us about the universe. Theologians also examine historical records that document the complex relationship theology has had with science, ranging from collaborative, fruitful engagements to periods marked by tumultuous and tense confrontations. Theological analysis also extends to the methods used by scientists when conducting scientific investigations and the underlying epistemological assumptions that guide scientific work. The whole of science - its findings, history, methods, and assumptions - has been the subject of meticulous theological analysis.

Not everyone is sympathetic towards the recent theological explorations

into science. Scientists critical of the theological enterprise dismiss this trend as meaningless, arguing that a close study of science should make theologians realize that while science is driven by empirical evidence, theology is nothing but a biased, myopic discipline that is founded upon ignorance and superstition. Theologians unsympathetic to this dialogue voice their concern that theology should focus more of its attention on pressing theological issues like the doctrine of incarnation and atonement, instead of being preoccupied with black holes, chromosomes, and human consciousness. Still others maintain that theology cannot learn anything valuable from science because there lacks any point of contact between the two disciplines. Science concerns itself with what can be verified within the realm of experience while theological questions address matters that transcend the empirical world. Contrary to such contentions, however, the present study will argue that a careful, nuanced study of science is crucial for theological inquiry.

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One of the overriding aims of theology is to impart and spread the teachings of the church founded by the apostles of Christ so that people can orient their lives to God and lead fulfilling and meaningful lives. The Christian message as a whole entails many doctrinal truths that are considered binding for all ages. Ethical norms, or moral imperatives that should guide our everyday activities, form an important part of what needs to be handed down to each generation. Regardless of public opinion and social conventions that change with the times, theology is obligated to reaffirm with steadfast commitment what God decrees as morally right and wrong. Selfless devotion to the poor and the hungry define the Christian life whether it appeals to our modern sensibility and the pursuit of material wealth and comfort doesn't

reflect the central biblical teaching of agape or self-less love. Theology also enunciates the Christian doctrine of God that is embedded in scripture and the various historical creedal teachings to prevent people from embracing misleading and skewed understandings of the divine reality. The Christian God is not an anthropological projection that merely mirrors our whims and the values we happen to hold dear but is the creator of the universe who challenges us to live humbly and righteously while serving the common good. What followers believe about God is of theological importance because they cannot construe God in ways that suit their fancy or predilection. The beliefs they have must be shaped by, and rooted in, the Christian tradition. Another important aim of theological inquiry is to articulate the cosmic significance of the death of Christ, for his death on the cross wasn't, for the Christian faith, the death of another failed prophet or religious guru with overambitious, megalomaniac dreams who sought to transform the world. It helped establish a new and unalterable relationship or covenant between God and humanity that was initially breached by human sin.

The theological task of reaffirming the core teachings of Christianity to convince people of their truth has not been entirely successful. Many living in the secular world find faith in a personal God and the accompanying doctrinal beliefs to be irrational and superstitious relics from the past. There are stumbling blocks and obstacles that preclude people from adopting the faith, one of which is the amount of suffering and pain one finds in the world. Because Christianity understands God to be both loving and omnipotent, suffering brought by tsunamis, dictators earthquakes, and concentration camps poses a problem for faith. For he is either loving and compassionate but cannot prevent evil, in which case he isn't omnipotent or he can make the world bereft of evil but doesn't in which case he is not loving. Another reason why people find what theology disseminates unconvincing is that it doesn't

mesh with the values they consider to be self-evidently true. Many find the church's teachings on sex to be puritanical and anachronistic because of its unwillingness to accept more casual sexual encounters between unmarried couples and the right for women to have an abortion when they become pregnant through these relationships. Violence committed in the name of God also puts many people off religion, whereby they seek alternative avenues to find fulfillment and meaning. A twisted version of religion rooted in hate, ignorance, and fear spurs people to carry out atrocious crimes directed against those who they regard as their enemies. There is also no denying that religion has historically "fueled grievances, defined and entrenched conflictual identities, provided incentives to violence, and promised vindication and reward to those charged with waging war" (Fergusson, 2009, p. 137). Unable or unwilling to discern true religion from fanaticism, many are led to believe that religion is and always will be the root cause of terrorism, war, and social instability.

Belief in God is also viewed with incredulity because it is thought to be incompatible with modern science. We live in an age where science is regarded as the paragon of rationality and knowledge. Impressed by the triumphant advance of science, where hitherto unknown areas in cosmology and microphysics have unveiled their secrets to scientific experimentations, many are skeptical towards truth-claims that are not supported by the corpus of scientific knowledge. Knowledge substantiated by the methods of science encompasses everything we know and theological assertions are viewed with skepticism because they are thought to be incompatible with what science teaches us about the world. The doctrine of creation, or the idea that the whole universe was brought into existence and is sustained by a transcendent God, is often brushed aside as untenable given what we know about the origin of the universe from the Big Bang. Many contend that

science has gathered enough evidence to suggest that the world originated when an infinitely dense concentration of matter and energy exploded about fourteen billion years ago, giving rise to galaxies, stars, and atoms. This cosmological model is said to question or undermine the doctrine of creation because it doesn't need to invoke any supernatural being who resides outside the physical universe to help explain our cosmic origins. Another potential source of conflict between faith and science is evolutionary biology. Before Darwin, many were convinced that nature was created by a divine intelligence because both animals and plants showed signs of purposeful design. Just as the intricate and complex structure of a watch bears witness to an intelligence which created it, it was thought that species were all well-adapted to their environment because the bird's beak, the giraffe's neck, and the elephant's trunk were deliberately made by an omniscient being to serve their respective biological purposes. The theory of evolution through natural selection questioned the teleological picture of nature by giving a naturalistic explanation of why species were adapted to their environment. Because of the shortage of resources, species compete with one another for survival. Those equipped with advantageous traits brought by random genetic mutation survive, thereby passing on these favorable traits to their offspring, securing their future survival. As Russell (1985) explains, "A giraffe's neck was long not because a wise Providence intended it so, but simply because possession of such a feature was a necessary condition for survival" (p. 153). No reference to a designer God is needed to account for how species evolved to their current state. Furthermore, the Darwinian account of evolution expounds a very competitive and harsh world, a world red in tooth and claw, where species with the traits necessary for avoiding predators or killing their prey survive. Many find it hard to fathom how an evolutionary process that brings death to the weak and maladjusted can be guided by a caring and

benevolent being. As Coleman (2015) describes the Darwinian world, “A universe that is cold and indifferent, an earthly world that is red in tooth and claw, and life processes that are meandering and driven by survival of the fittest are not transparent windows to an intelligent designer” (p. 22).

It behooves theologians to scrutinize the well-established findings of science because they are often given an atheistic interpretation that leaves no room or space for God. That is, scientists often construe science as intrinsically atheistic, convinced that the laws and principles they uncover demonstrate unequivocally the absence of any spiritual reality. Yet if God is the God of the entire cosmos, and not a human construct that helps our existential need for security and guidance, what science reveals about the universe cannot falsify his existence. Rather the richness, intricacy, and vastness of the universe point to the glory, power, and mystery of God. Thus, theologians must attend to the theories that are construed from the standpoint of atheism and demonstrate how they are compatible with the existence of God. The theory of the Big Bang, for example, doesn't render God otiose because while it gives a causal account of how the universe came into existence, the doctrine of creation found in Genesis is not a scientific treatise that expounds the physics that gave rise to our world. Rather, it is a deeply spiritual text that purports to answer a series of theological questions that was thought pressing at the time. During the time of the Old Testament, many venerated animals and planets as God, bestowing them with divine qualities and kowtowing before their images. The Book of Genesis exposes the idolatrous nature of such worship by showing how the entire universe was brought into being by God from nothing. A finite being that owes its very existence to a reality that created it cannot be the object of genuine spiritual devotion. In addition, many religious sects at the time regarded the world as intrinsically evil. For the ancients, natural disasters and the human

propensity to commit sin demonstrated how evil was deeply rooted in the very core of existence. The doctrine of creation is in part a critique of this contention. Evil cannot be the final and ultimate way of characterizing a world created by a loving, compassionate creator who pronounced his creation as good. God, in other words, is not in competition with other scientific theories that purport to give a physical description and explanation of the genesis of the world. The doctrine of creation as it appears in the Old Testament is a theological response to issues that have nothing to do with the scientific origin of the cosmos. Thus, "when approaching a biblical book, it is important for us to try to understand, as far as we are able, the type of writing involved (the genre of the book), and thus to try to make the way in which we read that book relevant to the text in question" (Fuller, 1995, p. 66).

In a similar vein, the theory of natural selection is not incompatible with the doctrine of creation. The former delineates the physical process and mechanisms that underlie evolutionary change while the latter, among other things, articulates through religious symbols and metaphors the reason why we are here and what purpose we should ultimately serve as God's creatures. According to the prophetic tradition, being created by God means that we are utterly dependent on God for everything. Trying to live autonomously by severing ties with God will only lead to our spiritual malaise because the heart is restless and life remains disoriented unless we place God at the center of our lives. The biblical understanding of the creator-creature relationship has nothing scientifically substantial or relevant to say about how species have evolved. Appealing to the doctrine of creation for scientific insights is not unlike scrutinizing the plays by Shakespeare for technological breakthroughs. God is not a scientific hypothesis on a par with quantum theory or the continental drift theory that purports to explain how atoms behave or why there are earthquakes. God is the ultimate answer to the

fundamental existential problem of which purpose we should serve in life or why we are here surrounded by a scientifically explicable cosmos in the first place. By showing how science doesn't undermine belief in God, theologians can remove one of the major hurdles to faith.

Another possible source of conflict between science and faith that is often cited in the literature is the alleged existence of an immaterial soul which the Christian faith is thought to be committed to. Though still in its infancy, research in neuroscience has helped uncover both the nature and function of the human brain. We are learning more and more about the nature of human consciousness and how our cognitive activities are supported by different regions of the brain. As neuroscience advances with the help of more ingenious experiments coupled with more advanced technology, we will delve further into the innermost recesses of the mind. The existence and nature of the human soul, however, has baffled neuroscience, for its reality has proven to be undetectable thus far and, as many practicing neuroscientists argue, will remain so in the future. This is because empirical experiments cannot ascertain the existence of an immaterial entity which by nature doesn't occupy space and time. Those who conceive science to be incongruent with faith commonly argue that the soul poses a serious problem for theology because faith assumes the existence of a spiritual substance that cannot be verified by science. As Barnes (2010) writes, "The notion that there is a non-physical soul to account for human intellectual activities may look more and more like a forlorn holdout from the days when the world was full of animating principles called souls" (p. 237). Two points need to be made. First, the fact that the soul lies beyond the purview of science doesn't necessarily mean that it doesn't exist. The existence of the soul becomes questionable if we endorse science as the sole arbiter of what does and doesn't exist. Furthermore, the view that science

determines what is and isn't real is not a scientific claim but a philosophical view of science. After all, scientists cannot conduct experiments to verify that science and science alone determines what constitutes the furniture of the world. When scientists and philosophers argue that science qua science questions the soul's existence, they are simply using science to voice their metaphysical views. "Those who say that science can answer all questions are themselves standing outside science to make that claim" (Trigg, 2015, p. 54). Secondly, it is questionable whether the Christian faith does in fact embrace the existence of an immaterial, spooky, ghostlike substance that is somehow embedded in our physical body. There is a well-respected tradition within Christian theology which regards the human being as a holistic whole, a psychosomatic unity where there is no bifurcation between the mental and the physical, the body and the spirit. We engage in both cognitive activities – predicting, inferring, imagining, etc. – and non-cognitive activities – scratching, winking, snoring, etc. – but they don't arise from different areas of our being. Their origin lies in our identity as a single self which we can express in many ways.

Given that we live in an age saturated with the technological benefits brought by science, scientific knowledge established by the methods of empirical inquiry enjoys great prestige. Putative truth-claims that are not compatible with well-established findings of science are viewed skeptically. Many apologists of science argue that standard theological discourse is theoretically dubious, for it doesn't accord with the verities of science. The disreputable status of theology can be amended by showing how its central claims aren't incongruent with science.

As was mentioned before, we live in an age that shows great trust and belief in what science can achieve. Scientists are seen as the new high priests of contemporary society, capable of bringing prosperity, happiness, and knowledge through the discoveries they make. For many, science has become the new golden calf, replacing subjects like theology and philosophy which were once extolled and valued in the past for yielding knowledge. It is science, not theological speculation or philosophical reasoning, that is thought to unveil the mysteries of our being and the natural world. If we suffer from depression and fail to find any meaning in life, we approach a psychiatrist, not a priest or a religious sage. Those who have problems establishing a stable relationship with their partner consult a self-help book, not the bible. If we are physically ill, we depend on doctors who are knowledgeable about cutting-edge medical science, not witch doctors or astrologers. We measure the health and vibrancy of society in terms of its scientific and technological achievements, and not by its spiritual orientation and religious outlook. As Ferre (1993) rightly observes, "When we think about death, our immediate recourse is to medical research. When we think about sin, we turn to technologies of behavior modification and chemical cures. When we think about providence, we trust in technological progress" (p. 48). Given this reverence towards science, disciplines that make knowledge-claims that cannot be confirmed scientifically are marginalized. The field of education is frowned upon because theorists and practitioners are inclined to make empirically untested claims about learning that merely reflect their subjective opinions and the academic status of sociology is questioned by many because it is often difficult to conduct scientific experiments to adjudicate the truth between rival hypotheses, given the complexity of social

phenomena. And conversely, disciplines that have liberated themselves from the shackles of dogma and mere speculation by adopting the mode of scientific analysis are held in esteem. Subjects like psychology and economics are thought to engender well-corroborated truths about human behavior because their claims are confirmed by empirical data. By splitting the atom and sending satellites to the far reaches of the solar system, science has demonstrated its utility and power, sidelining disciplines that fail to appropriate its mode of analysis.

Alongside such disciplines like education and sociology, theology has also come under harsh criticisms for articulating ideas that are not warranted by science. Critics argue that though theology purports to be an intellectually rigorous discipline, it fails to meet the standard in terms of rigor because its claims cannot be supported by empirical evidence. Theological dogmas, it is argued, are unquestioningly and blindly accepted, for their truth cannot be discovered and established by the method of science or deductive reasoning. We cannot conduct experiments with telescopes and test tubes to verify the miracle stories that are found in the New Testament nor can the divinity of Christ or the doctrine of transubstantiation be empirically confirmed with microscopes and beakers. Furthermore, because we are incapable of discovering theological truths on our own however hard we think and imagine, we are utterly dependent on God to reveal himself to us through Christ and his apostles so that we can see through a glass darkly. According to critics, religious faith is a blind leap into darkness because the veracity of its foundational beliefs – the divinity of Christ, the resurrection, the virgin birth, etc. – must be accepted on faith; their truth, for the most part, cannot be confirmed by logic or scientific experiments.

To help maintain the theoretical credibility of theology in an age of science, theologians need to examine what science has uncovered about the

world and show how it supports the pillars of faith. Otherwise theology will be brushed aside as a trivial pursuit that can only interest the faithful. Cut off from the rest of the academic world, it will become further and further isolated as an irrelevant pursuit. Addressing issues that are thought to be intellectually dubious. Needless to say, science doesn't have a bearing on every theological theme. Biblical exegesis is by and large a linguistic pursuit that can be aided by the works of literary critics and novelists, not scientists working in laboratories. Clarifying and defending the doctrine of incarnation is primarily a philosophical undertaking where arguments are constructed and refuted by invoking philosophical concepts and modes of analysis. But there still remains an extensive and rich array of theological truth-claims which can in principle be supported by science.

Consider the problem of free will. According to the Christian faith, we can to a large extent determine the quality of our life by choosing which course of action to take. Our choice to attend university, to become a lawyer, or to get married is not coerced by our genetic makeup or by the environment we were raised in but is the free expression of our will and deliberation. Newtonian physics posed a problem for belief in free will. According to the Newtonian picture of the world, the fundamental constituents of matter – atoms, electrons, protons, etc. – are governed by ironclad laws of nature that determine the future course of every single particle in the universe. Atoms have no choice but to blindly follow the trajectory predetermined by the laws of nature. And because human beings are made up of these particles, the choices we make, the thoughts we entertain, and the courses of action we take are all determined by antecedent conditions over which we have very little control. Though we are inclined to think that our indeterminate future can be shaped by our plans and decisions, our fate is sealed by the irrevocable laws of physics. The theological

implication of Newtonian science is that we cannot be held morally accountable for what we do because our action is not a reflection of our freedom of choice, but what we do is coerced by forces beyond our control. That is, we “have no choice when faced with alternatives, but are caused to follow one course over the other” (Sweetman, 2010, p. 131). Contemporary physics, however, depicts a world at odds with Newtonian science. The behavior of subatomic particles cannot be predicted in advance because the world is intrinsically indeterminate. As the Uncertainty Principle states, one cannot simultaneously determine or predict the velocity and position of any given subatomic particle because the world of atoms doesn’t follow a path predetermined in advance by mechanistic physical laws. And our inability to establish precise, deterministic laws is not a reflection of our ignorance but is indicative of how the world is objectively structured. If the subatomic world is indeterminate by nature, the same can be said about human behavior. For we are, after all, composed of matter that doesn’t blindly obey mechanistic laws. What we do and say aren’t predetermined because our physical constituents themselves manifest random, undetermined behavior. We are, contrary to Newtonian physics, not cogs in a mechanistic universe, forced to make the choices we make. Arguably, contemporary physics lends support to our identity as free agents who can determine the future by the projects and plans we seek to fulfill. Put differently, by establishing the indeterminate nature of the subatomic world, science gives credence to the central Christian view that we are responsible for what we do in life because the decisions and choices we daily make all stem from our free will.

We are born with fundamental needs that have to be satisfied in order to lead fulfilling lives. We have an innate need to quench our thirst and satisfy our hunger if we want to survive. Because we are by nature social animals, we yearn for human company whereby we share our joys and sorrows and

encourage one another when necessary. We are also genetically endowed with the drive to mate, and we seek to satisfy this desire by engaging in sexual intercourse. Our thirst and hunger and need for friendship can in principle be satisfied because the world consists of objects – water, food, people, etc. – that can meet our needs. The basic needs we have imply the existence of what can satisfy them. Now anthropological studies have unveiled another fundamental need shared by the human race from antiquity, namely a deep yearning for a spiritual reality that will confer a lasting sense of meaning and orientation in life. Our ancestors painted the caves with demigods and engaged in various forms of religious rituals to fulfill their spiritual needs. This was followed by prophets and gurus who, because of their spiritual insight and openness to a transcendent reality, helped establish various faith communities throughout the globe, thereby quenching their people's thirst for spiritual harmony and guidance. Scientific studies of the human condition have shown the extent to which our craving for spiritual fulfillment is an endemic feature of humanity, something deeply woven into the core of our being. We are biologically preprogrammed and hardwired to seek a spiritual reality that religious faith affirms. If our basic needs entail the ontology of what can fulfill them, then our spiritual longing points to a spiritual dimension that waits to enter into our lives. The universal yearning for a transcendent reality intimates a reality that can satisfy this longing.

One of the bewildering facts about the cosmos is that it manifests a series of different discernable regularities. Flowers bloom when summer arrives, bears hibernate during winter, the planets orbiting the sun follow a predictable trajectory, and oxygen is always released during the process of photosynthesis. We are not only surrounded by such regularities but we can use our rational faculty to discover the causal mechanisms that underlie and give rise to what we observe. Without order, science would not be possible.

Scientific hypotheses and theories cannot be framed unless the world consists of patterns and regularities that can be discerned empirically. However, the world as we know it could have been a place ruled by utter chaos where planets suddenly for no rhyme or reason change their trajectory and cups and tables suddenly hover in space defying the law of gravitation. The very fact that our world consists of patterns and regularities, that it is coherent and orderly, demands an explanation. The God of the Christian faith can make sense of this staggering feature of the universe because he has revealed himself to be a personal agent who embodies rationality as one of his core divine attributes. That is, he is not an irrational being devoid of intelligence; his thoughts don't violate the canons of logic and his acts are consistent with his thoughts and beliefs. Being the creator of the universe, what he creates is bound to reflect and exemplify his rationality by manifesting order and regularity. "We can affirm that the unity and rationality of creation...mirrors the unity and rationality of God" (Tilby, 1993, p. 138). And furthermore, we can exercise our rational faculty and learn something about this order because we share God's rationality by being created in his image. Though our ability to reason can be misused or abused, we can draw valid inferences, entertain cogent ideas, and probe the secrets nature has in store. We are equipped with the power to do science because our reasoning capacity has a distant resemblance with the rationality of God. "Because we have a rational mind, which is like the mind of God, we can expect to be able to understand the rationality of the world he created" (Dowe, 2005, p. 64). The world, including ourselves, is imbued with rationality, pointing to a rational creator who brought it into existence. The rationality of the cosmos is to be expected given what Christianity affirms about God. The existence of God makes sense of the intelligibility of nature and our own rationality which would otherwise remain an utter mystery.

In summary, the rapport with science is valuable for theology because the scientific theories and laws that it has helped disclose can, in principle, lend support to some of the central doctrines of the Christian faith. Theological assertions, contrary to what atheistically inclined scientists and philosophers contend, can be grounded in the way the world is disclosed by science.

3

Academic disciplines differ in their method of inquiry and the goal they seek to attain but they share the willingness to subject their understanding and knowledge to critical analysis. Researchers in any field, whether it be zoology or literature, turn a critical eye to the theses proposed by their colleagues, arguments put forward to defend a particular point of view, and the alleged discoveries made possible by experiments and abstract speculation. Thus, mathematicians cross-examine whether deductions from axiomatic premises are logically valid and physicists engage in intersubjective experiments to test empirical claims when in doubt. Historians critique how others interpret and make sense of the past and literary critics critically assess how others understand and evaluate works of literature. The cumulative growth of knowledge within any field presupposes a community of scholars who are convinced that truth can be reached through mutual criticism whereby taken-for-granted assumptions and the logical flow of arguments are scrutinized. The dogmatic adherence to theories, the unwillingness to be open to what subsequent research might unveil, and the reluctance to venture beyond established truths can only lead to academic stagnation. New vistas will forever be closed to communities which are bound by dogmatism.

Theology, on the contrary, is often characterized as an insular pursuit unaffected by and closed to knowledge yielded by cutting-edge research. Critics are quick to point out that advances in knowledge don't have any significant bearing on theology because its sole purpose consists of protecting the truths of faith from the corrosive effects of secular disciplines. And it is thought that theology doesn't need to embark on an extensive study of science or philosophy to reexamine the content of faith because the truth it seeks to propound is universal and objective, impervious to change. Theological dogmas don't resemble our taste for clothes and our political allegiances which regularly change by following the latest trend. The foregoing characterization by the critic is not entirely inaccurate. Theology sometimes does regard theological dogmas as infallible and sacrosanct, vouchsafed directly from heaven and they cannot possibly be erroneous if bequeathed from an omniscient God. Questioning orthodox teaching is tantamount to questioning the authority of God. Those who expound unorthodox views, therefore, are labelled heretics or excommunicated and arguments defending orthodoxy are congratulated for upholding the truth. If theological truth is etched in stone, if its truth is beyond any doubt, then critical analysis becomes unnecessary. There is no need to critically explore a theme or issue if criticism cannot in principle improve or correct the understanding we have. As Cupitt argues, religion "sets up and protects the reality that people live by, and treats doubt as impious and sinful. It instinctively regards critical thinkers as a subversive, and is willing to mobilize formidable sanctions against them" (p. 253).

Yet theological dogmas are not impervious to doubt. Being fallible and conjectural, they are analogous to theories and hypotheses found in any other discipline. Theological doctrines, not unlike scientific theories, can be revised and corrected with the help of criticism. This is partly because they have

been formulated and articulated in late antiquity when very little was known about science, philosophy, and history. Theological thinking divorced from the rich intellectual heritage of modern scholarship is bound to be one-sided and partial. Scripture was written by those convinced that the world would end eminently. This conviction would have seemed untenable if they had known more about modern physics. In addition, theological thinking is always deeply embedded within, and heavily dependent on, a very particular historical context which shapes it in very definite ways. It cannot transcend the socio-cultural matrix it finds itself in and attain a birds-eye-view that can objectively explore the terrains of theology. Because any theological exploration is deeply rooted in history, it will inevitably reflect the biases, prejudices, and ideologies that define and characterize the historical context in which it is situated. As Byrne writes, “All religions, including those which think of themselves as bearers of the single truth, are local, contingent and relative; they are the products of human history” (p. 112). Patristic theology mirrors the suppositions and concerns of the early church fathers and theological analysis pursued during the Age of the Enlightenment reflects the philosophical presuppositions and metaphysical commitments shared during this time in history.

“No theology which seeks to express truth about the living God ought to pretend to finality” (Pailin, 1990, p. 29). Theological understanding is susceptible to revision; theologians must be willing at all times to listen and learn from neighboring disciplines and make changes when necessary. It mustn't segregate itself from the rest of the academic world by turning inwards and becoming oblivious to the ever-expanding wealth of knowledge brought by history or science. By opening its doors and welcoming the findings and insights of contemporary research, theology can in principle become cognizant of the contradictions, biases, unsupported claims, and

unwarranted assumptions that it was previously unaware of. And it can revisit and reexamine these anomalies and reformulate or even revise its core beliefs if necessary. Marxism, for example, has documented in meticulous detail how religion encourages blind subservience to state power and authority by the poor. There are passages in scripture which mandate obedience to state authority because political authority is thought to be bestowed to kings and emperors from God. The poor and downtrodden are also advised to accept the political state of affairs as unalterable because what really matters is whether one can enjoy eternal life in heaven by forsaking earthly riches and treasures. Political conservatism of this kind, however, is not congruent with the Christian God who seeks his children to love and care for the pariah of society. There are also important lessons theology can learn from feminism. Construing God as father may help highlight God as a personal being who can enter into a personal relationship with his people, but it can potentially alienate many women who associate masculinity with rationality, assertiveness, competitiveness, and aggressiveness. And conversely, God understood as a paternal figure may exclude many admirable qualities attributed to women – empathy, care, emotional attachment, etc. – which can enrich, deepen, and complement the orthodox doctrine of God. Furthermore, as many feminists have pointed out, many church fathers espoused celibacy as a way of life faithful to the will of God. Consequently, many viewed female sexuality as a source of sin because it led men astray by provoking their sexual drive. This rather puritanical and twisted conception of human sexuality doesn't accord with biblical teaching that embraces sexuality as a way of expressing love and commitment.

Theology can also amend its doctrines and teachings in light of modern science. Many contend that science has nothing important to offer to theology. Science, it is argued, measures the velocity of subatomic particles

and analyzes the interior layers of planets and stars. Theology doesn't concern itself with molecules and radioactive decay, but with God who transcends the world of natural phenomena investigated by scientists. The domain of science is nature while that of theology transcends the boundary of science. As Sacks (2011) writes, "Science takes things apart to see how they work. Religion puts things together to see what they mean" (p. 39). Yet theology and science don't exist in totally separate compartments with no point of contact for fruitful dialogue. They crisscross and overlap in complex ways not unlike the two strands that form the DNA molecule. That being the case, scientific knowledge does have important theological implications. Theology must first closely examine what science teaches us about the natural world and make necessary changes if it wants to remain credible and tenable in an age saturated with the fruits of science. What, then, can theology learn from science?

The doctrine of creation maintains that God is the ultimate source of everything there is. The universe exists because it was created by God out of nothing. Without God's original creative act and his will to sustain the cosmos, we, and the rest of the universe, will not be here. This immediately raises a problem, for if the world is God's creation why is there so much evil and suffering? Surely, an omnipotent God could have created a world devoid of all the pain and conflict we are surrounded with. The biblical response to this conundrum is that the world was bereft of any suffering prior to the fall of Adam and Eve. Before the first human couple committed their sin by turning their back to God and disobeying his command, the world was harmonious and orderly, devoid of any misery and conflict. But if evolutionary biology is right, the world could never have been a paradise untouched by death and disease brought by earthquakes, droughts, famines, and tsunamis. Ever since sentient creatures inhabited this planet, there were ruthless competitions

among species to secure scarce resources and those without advantageous traits were made extinct. Species that weren't biologically endowed with traits conducive to survival were ruthlessly exterminated. Natural disasters existed prior to the Fall. Meteorites struck the earth and earthquakes shook the planet, bringing death upon countless species. Pain and death were always an inherent feature of our habitat. And both men and women experienced the burden of life brought by work and family life before the fatal sin committed by the first couple. Ever since the birth of self-consciousness, suffering has been a deeply ingrained feature of our predicament. People have always struggled hard to rear children, endure illness, face loneliness, and find meaning in life. A time in history untouched by suffering and conflict cannot be scientifically corroborated. As Haught (2007) writes, "The evolutionary character of nature is difficult to square with a backward-looking nostalgia for a hypothesized state of original perfection" (p. 104).

The fundamental insight of evolutionary biology is that the hundreds and thousands of species which inhabit the world today all evolved from simple, primordial, self-replicating beings. From the mammalian whales that swim in the Pacific to the carnivorous lions that stalk their preys in the plains of Kenya, every existing sentient being traces its origin to the same biological source. The creatures that fill our planet didn't suddenly and instantaneously appear on the natural scene from nowhere but emerged gradually through the slow and painstaking process of evolution where many ill-adapted species were exterminated along the way. One possible source of conflict is the literal reading of Genesis and evolutionary biology. In scripture, we learn that animals and plants always existed in their present physical form. This implies that their physical characteristics underwent very little or no evolutionary change. And furthermore, there is no indication in scripture that they share

the same biological roots. Rather, we are told that God created his creatures separately, where reptiles and mammals all have separate origins that don't overlap in the past. A literal reading of scripture which is sometimes advanced by fundamentalists is incongruous with a theory supported by a wide range of evidence, ranging from fossil records to DNA research. Theology can obviously insist that Genesis is viable science and thereby question the truth of a well-corroborated theory. A more promising approach is to reexamine and reinterpret the true meaning of Genesis made possible by evolution. A more symbolic and nuanced reading of the first book of the Old Testament would conceive the creation narrative as articulating deep spiritual truths about ourselves through religious myth and metaphors. Genesis, according to this reading, was never intended to give a scientific account of our origins. To regard Genesis as a modern up-to-date text on science is to commit a grave category mistake of misconstruing scripture as a scientifically informative work in the nonfiction genre.

The last example concerns the ultimate goal of human history. The question whether history is marching towards a goal or not has provoked variegated responses from different quarters. Marxists argue from empirical grounds that history as we know it will reach the end when a classless society run by proletariats emerges after the inevitable collapse of the capitalist system. Others are convinced that the past will under slightly different guises reappear in the future, and this cyclical process will repeat itself endlessly without culminating in a final state. Some cannot discern any direction in history; wars break out, civilizations end, and dynasties rule for years but these events in history are not heading towards a goal that will end the historical process. Christian theology has also articulated and defended its interpretation of the meaning of history. The Christian faith is a faith in God who not only created the world but will fulfill his purpose in and through

human history. The purpose he has for history is fulfilled when his kingdom – a community comprised of people serving God and one another in self-less love and commitment – is established for eternity. The divine consummation, or God’s eternal reign over humanity, brings history to a close. The eschaton is the ultimate end or the omega point towards which history is moving. There will undoubtedly be wars, famines, droughts, despots, and other setbacks that may temporarily thwart God’s providential guidance towards his kingdom, but ultimately the goal he has in store for humanity will be fulfilled. This Christian interpretation of the meaning of history faces a problem. A kingdom eternally ruled by God on earth is physically impossible given what we know about the fate of the sun revealed to us by science. Our planet is dependent on the sun. Through nuclear fusion, the sun converts hydrogen into helium, and sends energy to earth, sustaining and nurturing life. But the sun will eventually use up all the hydrogen it has and when it does, it won’t be able to emit further energy. There is an additional problem. The sun will eventually increase its size and become a red giant, swallowing up earth as it expands. The Christian understanding of the end of history doesn’t dovetail with what science predicts about the future. To be sure, we might escape earth and inhabit another distant planet in a different galaxy before earth becomes inhabitable. But our colony will eventually come to an end because in the distant future, the cosmic expansion will stop, reverse its course, and everything in the universe will return to where it originally started. As Coyne (2015) asserts, “Perhaps humanity can be saved by a mass migration to other planets, but that doesn’t solve the problem, for the universe itself will also end” (p. 164). An eternal kingdom in the cosmos is a physical impossibility. God’s ultimate consummation or eschaton must be a reality that transcends the physical world revealed to us by natural science.

Theological thinking cannot be separated from its historical context.

Every epoch in history raises unique problems that necessitate a careful and rigorous rethinking of the fundamental tenets of the Christian faith. At times theologians have no choice but to revise and reinterpret the tradition that has been handed down to them. The recent dramatic growth of scientific knowledge has posed new problems for contemporary theological inquiry, leading many to revise traditional affirmations. Science has in recent years become an important source for modifying theological doctrines and thereby making them more intelligible and relevant in the contemporary world.

4

Whether it be art historians studying self-portraits from the Renaissance, historians analyzing the collapse of feudalism, or biologists examining the inner workings of the human cell, researchers, regardless of their discipline, all spend countless hours pursuing their studies because they want to deepen what is already known about what they are investigating. They are driven by the passion to answer a problem or make a discovery so that the framework we use to explore our world gives us a more exhaustive and fuller picture of reality. They seek a fuller, richer, more intricate, and more elaborate understanding of phenomena because they are not intellectually satisfied with the current state of knowledge. No one would be committed to serious research if they were convinced that the fruit of their labor would add nothing interesting to the corpus of human knowledge. Depth in understanding is apparent in many ways. Researchers' awareness reaches a more sophisticated and advanced level when they find a coherent explanatory framework that gives a rational account of a problem that interests them. Scientists experience professional satisfaction when their hypothesis successfully explains the behavior of atoms and molecules that

previously eluded their understanding and sociologists seek simple, elegant, and parsimonious theories that explain what remained inexplicable or shed some light on a problem that was veiled in mystery. Depth in understanding is also apparent when researchers uncover more knowledge about a particular subject matter, giving us a richer and more detailed picture of the world. The past becomes less vague and distant and more vivid and relevant as historians manage to uncover more factual details about what actually happened. On the contrary, our understanding of any historical epoch will remain shallow and superficial if there are many gaps and holes that need to be filled with specific details. Depth is also evident when researchers confront new, unanticipated problems as they advance further in their field. Intellectual progress is made when problems are successfully solved by meeting the criteria shared by experts in the field. But the solution of problems doesn't terminate the process of inquiry, because it raises a series of new questions that needs to be answered. The discovery of atoms at the turn of the century immediately raised questions concerning their internal structure, mass, and behavior. When they were answered, scientists started wondering whether they were in fact indivisible, prompting new experiments and speculations. As researchers explore new problems, they probe deeper into their subject, extending, however little, the horizon of what we know.

Historians ordinarily work with other historians and biologists with fellow biologists. There is nothing altogether surprising when researchers work with those who share the same expertise and background knowledge. Shared knowledge and understanding ease the process of communication and mutual criticism. Yet almost every subject is enriched by learning from other fields of discipline and its level of understanding shows little sign of progress and reaches a plateau if researchers fail to collaborate with those

who don't share the same frame of reference, theoretical assumptions, and approach to learning. Researchers from a different theoretical background often have illuminating insights and new and creative ways of approaching problems because they are reared in an altogether different tradition. Their toolkit, therefore, consists of different cognitive skills and strategies and the rich range of knowledge they bring to bear on any problem will also differ. The cognitive tools physicists use and the knowledge they have about gravity and motion are not shared by historians.

Sociologists can certainly work among themselves to help address the issue of, say, teenage suicide by examining the effects of peer pressure, the family, and schooling. Their studies, however, are bound to be biased for not taking non-sociological factors into account. Sociologists can turn to other subjects to help complement what their studies reveal. Theology can help illuminate this problem. Many contemplate suicide because they experience a deep and dark hole in the very core of their being. They fear the future, lack any overriding goal in life, and find nothing that really grabs their interest and attention. Disillusioned and jaded, many evade reality and attempt to heal their wounds by resorting to alcohol and drugs. Some overwhelmed by angst choose death. A theological examination of teenage suicide might prove both relevant and promising for sociology. It identifies the spiritual paralysis of youth to be rooted in a narcissistic obsession with the self, without much regard for the well-being of others. Adolescents, furthermore, descend further and further into the state of purposelessness because they fail to nurture a deep and lasting spiritual orientation that can give a focus or aim in life. Theology can illuminate the nature of their crisis by highlighting causes that are beyond the purview of sociological analysis. Another example of interdisciplinary research concerns education. A problem many educational researchers face is the ever-widening gap in educational performance

between students from poor and affluent families. As they advance through education, students from more privileged homes outperform those from poor families quite considerably. Researchers can obviously engage in action research within the school context to help identify and solve this problem. But in addition to such studies, educational researchers need to look elsewhere if they want a fuller and more complete account of student performance. Sociology is invaluable for addressing this issue because research has shown that parents of unprivileged families are inclined to belittle the value of education and impart such views to their children. In addition, those reared in poor households are at a disadvantage for not being exposed to books, magazines, and other reading materials that may pique their interest in hitherto unexplored domains and build their literacy through extensive reading at home. The language they use are also discouraged at school because it doesn't correspond to the standardized language used by the upper-class. Schools, in other words, don't exist in a sociological vacuum. The day-to-day experiences that define school learning are shaped by sociological factors which are often excluded by studies that focus too much on what happens within classroom doors. Any given phenomenon – society, nature, humans, etc. – can be studied from multiple perspectives and each theoretical framework can help give us a fuller and more elaborate picture of what we seek to understand. To put the matter differently, no single discipline can give an exhaustive analysis of what it investigates. As McGrath (2015) explains, "Reality is too complex to be comprehended by any form of intellectual tunnel vision. We need multiple windows on our complex world if we are to appreciate it to the full and act rightly and meaningfully within it" (p. 183).

Theology can also expand its understanding and widen its outlook by appealing to works done in other subjects. Works of literature, for example,

have the power to illustrate the true meaning of some of the central religious themes through their narratives and descriptions. Some portray the dire, sinful state many of us are in, unable to control our drive to satisfy our internal cravings regardless of the harm they may inflict on others. Zola, for example, meticulously describes the woeful effect brought by those who succumb to their hedonistic propensities. Others depict characters who are unable to lead spiritually meaningful lives despite having a secure job and a happy family life. Novels by Tolstoy demonstrate how wealth and fame do little to conquer the sense of absurdity that befalls both men and women who fail to depend on God for spiritual meaning and sustenance. Often the pervasiveness of sin and the importance of having a spiritual orientation in life are more convincingly disclosed by literature than abstruse theological treatises. Works of art can also probe deeper into important religious topics. A painting or a piece of music by an artistic genius can reveal the pain and suffering of Christ on the cross which cannot be described so subtly in words. The meaning of Christ's passion becomes more poignant and enduring when expressed through artistic mediums because sounds and imageries are often more vivid, provocative, and memorable. A picture of a distant land is often worth a thousand words written on paper. Besides literature and the arts, history too can complement and deepen what theology affirms. The distance between the past and present can be narrowed when historians delve into the past and unearth what life was really like. Historical research is relevant to theology because it can give us a glimpse of the historical Jesus by uncovering the socio-cultural conditions – cultural traditions, religious rituals, underlying philosophical views, etc. – that shaped the time he was born and raised. Thanks to history, we now know that Christ shared with his contemporaries the apocalyptic vision that saw the imminent end of the world. This fact alone suggests that Jesus was truly human for espousing the

thoughts and beliefs of the time.

Science is another indispensable source for enriching theology. Because of theology's ubiquitous reference to human nature, psychological studies are highly relevant. The Christian understanding of the human condition is rather bleak. We are, by nature, disposed to do evil but are unwilling to do good. We are driven by greed, ambition, and lust, not by love for God, compassion for the poor, and empathy for the sick. We serve many gods created in our image – money, power, the state, etc. – but are utterly blind to the God we should serve with fidelity and commitment. Because the inner core of our being is infected by sin, we fail to do good even if we allow God into our lives. “No matter how hard we strive to live up to our intended role as God's representatives, we are destined to fail” (Stannard, 2004, p. 22). This Christian understanding of our fallen state is in many ways complemented by various schools of psychology. Each offers a distinct pair of lenses through which our frailty and limitation can be explored. For existentialist psychology, each individual being regards herself to be the center of the universe. Others are seen as a threat, a source of conflict, because their existence can destabilize her status as the center of existence. Whenever someone looks at us, we are no longer the measure of everything because we become the object of her perception. Human relationships are, therefore, fraught with conflict and tension because each struggles to make her being the center. Psychological studies have also shown how our thoughts and actions emerge from irrational fears, fantasies, and neuroses hidden and suppressed in our unconsciousness. Unbeknownst to us, we are driven by forces which we cannot fully control. The choices we make, the hopes we have, and the thoughts we entertain are all rooted in drives buried deep inside a dark abyss. Other studies have shown how humans eschew freedom. Instead of pursuing ends that reflect their values and following

paths that embody their philosophies, many are drawn to religious cults and political ideologies because they want to sacrifice their freedom and depend on authority. By acquiescing to authority, they don't need to think for themselves. They simply have to follow what they are told to do. Behaviorist psychology also doesn't characterize our being in a favorable light. We are no different from animals because our outlook and behavior are strictly conditioned by our environment. We are positively reinforced by rewards and avoid behaviors associated with punishment. Our very inner being is not unlike a lump of malleable clay, molded passively by our surroundings. These different findings from the science of the human mind give us complementary pictures of our weaknesses and shortcomings.

The power and glory of God is another central theme that runs through scripture. God, as affirmed by the Christian faith, is not one being amongst other beings we find in the world. He is not another galaxy or planet that occupies space. He is the transcendent source that sustains the whole universe. Without his presence, there would only be mere nothingness spreading throughout eternity. Modern science has unveiled the magnitude of the cosmos God created. Earth is a relatively small planet that orbits the sun. The sun is one among billions of other stars that exist in the Milky Way and there are, as far as we can tell, billions of other galaxies that fill the universe. Furthermore, the outer limits of the cosmos are continually expanding at a very fast rate every second, forever pushing the boundaries of the universe. Science has also substantiated the age of the universe. It came into being fifteen billions years ago when an infinitely dense point in space exploded. Sentient life on earth entered the cosmic scene as unicellular organisms millions of years ago and through the slow process of natural selection they evolved into the staggering variety of species that fills the planet today. The sheer immensity and vastness of our cosmos, not to

mention its age, revealed to us by modern science deepen the sense of God's majestic power that was shared by our forebears. For people of faith, the more they learn about the magnitude of the universe and its age, the more they are dumbstruck by the power that keeps everything into existence. The unbelievably large world science unveils is a little drop in the infinitely large ocean of God's being. The power of God that sustains such an immense universe transcends our ability to conceptualize or represent it in any imaginable way. Just as works of art testify the creative genius of artists, the majestic quality of the universe points to a divine intelligence that created its order and beauty.

Science has undoubtedly uncovered many physical laws and principles that underlie natural phenomena. Our modern scientific understanding is a great improvement over the crude and speculative theories that were posited by primitive science. Having said that, modern science is nowhere near to solving all the theoretical puzzles and anomalies that our world give rise to. In fact, as science probes into the structure of the cosmos and reach tentative, provisional solutions, new and hitherto unexpected problems emerge, inspiring new generations of scientists to further investigate unexplored realms and territories. A definite and final solution to scientific queries is forever an unattainable, elusive goal. The mystery of the world deepens the more we learn about the world. "The more deeply human beings penetrate into space and matter, the more inscrutable, the more enigmatic, reality becomes" (Kung, 2007 p. 74). If the ultimate reality of the cosmos created by God is forever shrouded in mystery, the theological attempt to deduce or infer anything lasting and concrete about God from the world investigated by science is bound to fail. One cannot gain clear insights into God's nature and being if the basis from which we draw such inferences is by nature mysterious. Nothing definite and unambiguous can be derived from

that which is by nature engulfed in mystery. Our knowledge of God is dependent on, and is largely restricted to, what he chooses to reveal about himself. Hence science not only reinforces the ineffable, transcendent nature of God but also questions the viability of deriving any substantial knowledge of his nature and being independent of divine revelation.

As we have seen, an additional contribution of science to theology is the manifold ways in which it can augment what faith affirms. Any object of study, whether it be society, nature, or humanity, can be approached and investigated from multiple theoretical frames of reference. These conceptual schemes provide different lenses through which any given phenomenon can be analyzed for deepening our understanding. Science is one of these lenses that help illuminate our understanding of the world by subjecting phenomena to empirical analysis. When what it investigates is theologically relevant, science often complements what faith affirms.

5

Science certainly raises problems that can only be competently addressed and solved by professional scientists. The types of experiments that can verify the existence of subatomic particles, the mathematics required to formulate scientific theories, and the implications that can be drawn from empirical hypotheses for future tests are all questions that can be best approached and solved by scientists. A neophyte cannot contribute to such highly technical discussions. Yet science does raise issues that are beyond the ambit of science, or problems that cannot be illuminated by the methods of science. Scientists can certainly use their expertise to help tackle some of these nagging questions but researchers outside science often have the knowledge and understanding to help address these anomalies more

effectively.

Philosophical issues, for example, are bound to emerge when doing science. One of the fundamental goals of science is to generate theories that are true. Scientists collect data, formulate hypotheses, make predictions, and subject their hypotheses to a series of tests because they seek the truth. The scientific enterprise is premised on the belief that truth about the world can be established by testing our conjectures to see if they give an accurate account of how things actually are. One of the philosophical issues that stem from science is the very nature of truth itself. Though scientists seek truth, they rarely reflect on its nature. Philosophers want to understand what the defining characteristics of scientific truth are and whether they differ to truths established in other fields like history or theology. Science has also made steady, incremental progress in uncovering the laws and principles that underlie nature. Many believe that this progress is due to the method scientists use. In awe with the spectacular success of science, philosophers are interested in formulating what this method exactly is and whether it can be used productively in other fields of inquiry such as economics or medicine.

Science also has sociological ramifications. Technological achievements made possible by science have greatly improved the quality of our lives. Longevity is possible because of advanced medical instruments and cell phones and refrigerators have made our lives more convenient and less strenuous. Technology has saturated the workplace, where work once done by humans is now being done more efficiently by robots and computers. Menial jobs in factories, teaching, and farming are now undertaken by nonhumans. As technology further advances, this trend will undoubtedly continue. Pilots and doctors might be made redundant in the future as more efficient robots take over their responsibilities. As a consequence, jobs will become scarcer as technology replaces humans. The unemployment rate is

bound to increase unless new jobs are created at an unprecedented scale.

Science also raises many complex moral issues that are within the province of theology. Morality is a matter of grave importance to theology. Morality is concerned with right and wrong action or what we as individuals should or shouldn't do under particular circumstances. Morality is also the bedrock of theological reflection because theology yearns to understand how we should live in accordance with God's will or articulate the quality of life that is most consonant with his being. In addition, it seeks to determine the nature of the moral problems we confront and ascertain what course of action we should take. The moral dilemmas that stem from science, therefore, have theological relevance and meaning. We shall be looking at three of them.

Many governments throughout the globe allocate a large portion of their budget to scientific research. Governments invest money in science because the new technologies it helps create advance the economy. Grants are offered to various institutes and universities in the hope that scientific research will yield more sophisticated, more efficient, more economical, and more advanced products. Scientific research can certainly be put to good use by creating items that will better our lives. Inventing new medical equipment is a laudable use of scarce resources because it may help cure illnesses. New and advanced agricultural technology will greatly ease and facilitate the backbreaking work of farmers and research into human genetics can help identify genes responsible for various mental and physical disorders. But science can be misused. Governments can often allocate large sums of money to scientific research to promote questionable aims. National defense is a fundamental concern for any independent nation wanting to protect its citizens from outside threats and maintain stability. Yet military expenditure can become astronomical when governments invest a large portion of the budget to create high-tech weaponry that is of little use. Precious money can

be used to realize aims that are more in tune with the genuine needs people have such as better public schools, a more stable welfare system, and cheaper, more efficient medical care. The moral issue at stake here is what aim scientific research should help realize. The answer will ultimately hinge on what people morally prioritize. Those who value defense will want the taxpayers' money to be used to build more weapons while others who prioritize social welfare will view this as nothing more than money put to waste. Or consider particle physics. Huge amounts of money are invested to help construct sophisticated experiments that can help replicate the conditions that existed when the cosmos was in its infancy. These costly experiments might help astrophysicists understand the intricate network of force and matter that helped propel the universe to its current state. Critics remain unconvinced. They maintain that even if such experiments reveal something substantial about the origin of the physical universe, money should be allocated to help solve some of the more urgent social issues that affect the day-to-day lives of people. Proponents of such scientific research programs argue that the advancement of scientific understanding is intrinsically valuable and that knowledge is always preferable to ignorance. Critics and proponents of research in physics part company because of the difference in their moral commitments. Alongside politicians and philosophers, theologians can join this important moral debate and articulate their moral vision that is rooted in their particular tradition.

Scientific research has also helped improve standard medical practices. Surgeons are now capable of conducting more reliable and safer operations by implementing advanced medical equipment. Doctors can also give more accurate diagnoses using advanced medical tools that are based on cutting-edge scientific research. Medical prescriptions are also becoming more reliable as they stem from more objective prognoses made possible by

science. As the frontiers of knowledge disclosed by science extend further, primitive practices will give way to more modern and advanced operations and diagnoses. Yet the improvement of medical science is not immune from problems. Scientific knowledge can be used to support practices that are morally contentious. Abortion gives rise to heated discussions. Those in favor of abortion argue that every woman has the moral right to terminate her pregnancy while critics denounce it on the grounds that the fetus, regardless of the size, is human and has the right to be born. Supporters typically respond to such arguments by insisting that the fetus doesn't share many of the attributes – consciousness, desire, a sense of self, etc. – that characterize a live human being. Critics contend that women who undergo abortion often experience long-lasting guilt and severe depression because they regret or come to doubt their decision. What happens inside hospitals and clinics is not morally neutral. Extremely complex moral issues arise as doctors and nurses work together to assist their patients. These challenges require people with different backgrounds to enter into the dialogue and share their knowledge and experience to help bring focus and clarity to the debate. Theologians cannot regard this ongoing debate with detached indifference from the outside. It must join the discussion and help move it forward.

Genetic research has moral implications that cannot be ignored. Our genetic makeup has always interested biologists because of the mounting of evidence that shows how our genes shape our physical and mental characteristics. Science has helped us understand the exact correlation between genes and human anatomy and neurophysiology. Scientists can now put their knowledge of human genetics to good use. They can, for example, predict whether children will be born with physical disorders or whether they will be born with genes that will give rise to physical illnesses later in life. In the future, scientists may be able to alter the gene code in advance so

that children won't be born with serious defects. Yet genetic engineering raises serious concerns because we can in principle engage in genetic tinkering to produce traits we seek. There is no reason why parents in the future cannot approach geneticists to help create child prodigies or those destined to be physically attractive. A world full of Mozarts and Einsteins is a genuine possibility. Many find it morally repugnant for parents to shape their children in ways that will satisfy their egos and twisted dreams. Again, theology can contribute to the discussion by posing questions that tend to be ignored or sidelined by the participants and by exposing the hidden biases that often shape the debate.

So why is it important for theology to attend carefully to the issues and problems science generates? Instead of getting embroiled in moral discussions that don't lend themselves to agreements, wouldn't it be better off for theology to distance itself from these unending debates? If theology decides to ignore current ethical problems, it will be seen as an irrelevant discipline that has no important bearing on what affects people's lives in the real world. The truth theology affirms will be conceived as antiquated dogma that isn't applicable to the contemporary scene. It cannot afford to remain silent as discussions ensue. Armchair theologizing that is not in touch with reality will only further separate theology from what really matters in the contemporary world. Another rationale for engaging in such moral debates is that theology can articulate its distinct moral voice through moral dialogues. Christianity has a moral vision founded upon what Christ disclosed about God's will and the quality of life that realizes the divine purpose. His life and teachings reveal the sanctity of each and every human life and the importance of forsaking earthly rewards and riches that only give us momentary satisfaction. Our life, furthermore, should not revolve around our personal plans and projects but should serve the poor and the sick with

unconditional love and compassion. This moral outlook can serve as a basis for addressing and answering the moral questions posed by science. We live in a pluralistic society where different belief systems – feminism, Marxism, scientism, new age philosophy, etc. – are at pains to win converts by raising their voices and justifying their commitments. If convinced of its truth, theology must appeal to its rich, spiritual heritage and bear witness to the truth it seeks to promulgate. The moral issues raised by science can be used as a means to articulate the moral vision theology is committed to.

Science is not a morally neutral enterprise. Some of the moral dilemmas contemporary society faces have their origin in science. Because morality is one of theology's central concerns, these dilemmas are of great interest and relevance. The Christian tradition, moreover, has the resources to address and expound its moral vision, thereby contributing to the dialogue held in the public sphere.

Conclusion

Christian theology has had a long and rich history that has spanned over two thousand years. Throughout its history, theology has entered into dialogue with various fields of inquiry. Science has always exerted its influence and presence on theological thinking. Aristotle's physics helped frame the Christian outlook of the physical universe that lasted for centuries and the heliocentric model proposed by Copernicus shook the theological world by dethroning humanity from the center of the cosmos. Galileo's findings of Jupiter and the moons were condemned as heretical among certain quarters. Theology's present engagement with science is, therefore, an extension of an old ongoing tradition and this dialogue can benefit theology in manifold ways. It was argued that theology can not only demonstrate how

science isn't incompatible with faith, but it can also refer to scientific findings that lend support to the existence of a divine intelligence. In addition, theology can join hands and enter into a syncretic relationship with science by deepening and enriching its fundamental tenets in light of what science discloses. At times, theology will be forced to reformulate and revise its tradition in light of science. Theology must also attend to the moral issues science raises to help demonstrate its relevance in the contemporary world. Theology that is out of touch with science will turn itself into a blind, dogmatic endeavor. The path it will undertake in the future is not predetermined. It will ultimately depend on the willingness of theology to partake in this pursuit with humility.

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