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Science and Theology in Religious Education and Faith Formation with Children and Youth: Towards a Post-Foundationalist Approach

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ABSTRACT

The intersections of Science and Theology have received a great deal of attention in recent decades. A broad range of approaches and discourse exists within academic environments. Within popular culture, however, the public perception often is that science and theology are in conflict and at odds with one another.

Many authors have attempted to write about science and theology from a dialogical standpoint. Educational projects over the past ten years have attempted to address the supposed conflict between religion and science, and affirm the validity of religious beliefs in a scientific era. Too often, however, scientific concepts are misappropriated as metaphorical illustrations of classical theological formulations. The principal aim of these projects is to offer young people reasons why they can and should continue to adhere to classical/orthodox Christian belief within Western Protestantism.

I challenge both the use of the conflict thesis as the basis to exploring science/theology, and also the misuse of the science/theology discourse as a crypto-apologetic for orthodox Christianity. I propose a methodology and pedagogy for religious education that integrates diverse ways of human knowing – particularly scientific knowledge – into religious education and faith formation programs.

Acknowledgments

"You tell an old, old story
of love, perfect love, from above.
But who can measure light
of a starry night?

We are all born from dust,
the dust of ancient suns.
But who can track their burning
through our veins…?

from *Starlight*
Poem by Van Waffle
Music by Mark Sirett
2010

"The known is finite, the unknown, infinite. Intellectually we stand on an islet in the midst of an illimitable ocean of inexplicability. Our business in every generation is to reclaim a little more land, to add something to the extent and the solidity of our possessions…"

Thomas Huxley, 1887

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Preface

Story from the Context of Congregational Ministry

Earlier in my career, I volunteered for a time in a local congregation, leading the Sunday morning children's program. Children of varying ages would come for the typical 45 minutes of engaging with scripture, story, wonder, creativity and prayer. Often, we would have visiting children – grandchildren of parishioners, staying for the weekend, or one of our regulars would bring a friend. These were often children who had no connection to, nor experience of a faith community.[1]

One of these encounters was particularly memorable, and (based on the number of times I have shared this story in Christian education classes) one of the many small catalysts to my current study. A boy, perhaps seven years old, arrived at the door of the classroom and announced emphatically; "I shouldn't be here". I asked him why not, and he simply replied "Because, I don't believe in God. I believe in dinosaurs."

In that naïve response, there are layers of questions that reverberate. In many ways I was not taken aback (though quite amused) by his response – he is the product of his culture. But, to go beyond the surface; at the tender age of seven, what social, cultural, familial, media and educational influences had already been brought to bear on his young life that told him that these two things must, of essence, be contradictory? What has he seen, heard, understood and integrated from his family, teachers, media and peers that bring him so emphatically to this position, simplistic though it may be. How does his mind integrate what he is constructing as a belief system about the world? (i.e., belief as factual

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[1] As evidenced by one visiting child who, upon hearing the story of Noah's Ark exclaimed "hey, this is *just* like 'Evan Almighty'". (2007 fictional film about a contemporary 'Noah' named Evan who gathers animals and builds an ark).

existence? belief as value system? belief as grasp of historical realities?) Ian Barbour

would certainly describe this response as operating in the 'conflict' model of engagement

between science and religion[2]; you can have one or the other, but not both. The false

dichotomy of science and theology as enemies continues to be prevalent in popular

discourse.

Experience from engaging Teens and Young Adults in Science and Theology

This brief encounter with this small dinosaur-believer could be dismissed as a single

occurrence, but it is mentioned to highlight an observed trend. Over the course of sixteen

years of directing the *Ask & Imagine* High School Youth Theology program in the Faculty

of Theology at Huron University College, and in workshops and lectures with youth in

other parts of the Canada, I repeatedly encountered teenagers' blind adherence to the

conflict model. Most youth had never had any experience of engaging science and

theology, and their opinions on the matter were largely formed by their impressions of the

discourse from popular culture and social media. *Ask & Imagine* was one of many summer

academies sponsored by the Religion Division of the Lilly Endowment Inc, under their

grants program High School Youth Theology Programs (HSYTP). Between 1999 and

2016, hundreds of youth attended the summer academies at Huron University College, and

thousands attended similar programs across the United States and Canada. One young

person at the beginning of a science/theology lecture at *Ask & Imagine* commented;

"People just regard my faith as superstition when compared to 'modern' scientific study. I

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[2] Ian G. Barbour. *When Science Meets Religion: Enemies, Strangers or Partners?* Harper Collins.
2000.

feel like I'm supposed to leave my brain at the door when I walk into church, and leave my faith at the door when I go to school." Another remarked:

"I can't ask questions like this (about theology's interaction with scientific knowledge) at church. Either people don't want to talk about it, or they have no idea how to talk about it."

The pervasiveness of this trend should be of concern to those in the application of practical theology beyond the academy, and those in education and formation within faith communities. The twentieth century was a time where the supposed battle lines have been sharply drawn – between the knowable and the numinous, between the logical and mystical, between the physical and the intangible. Despite the consistent work and prodigious contribution of practical interpreters of process theology (such as VanHuysteen and Suchocki and others, who aim to develop a theology that is not at odds with its Western context) many Christians in the pew are at a loss when it comes to engaging their faith with science.

Implications

In response to my encounter with the 7-year-old dinosaur enthusiast, and conversations with teenagers over the years in science/theology seminars, I began to wonder about how children are educated within the faith community within a post-modern, pluralist and technological society. Are they being taught by adults who at best are intimidated from engaging these ideas, or at worst themselves still understand science and theology as contradictory ideas? How are children and youth taught theology or how to understand the faith of their community? Is faith taught as unassailable dogmatic belief, or a version

of medieval magical thinking that perhaps doesn't hold water when brought into dialogue with contemporary academic study, particularly in areas of scientific enquiry?

Through this thesis I will examine these questions by exploring some of the history of the conflict model in science and theology. Though the conflict model doesn't represent current academic scholarship over the past forty years, it is still very much present in popular culture and discourse. But even in its roots, the early proponents of the conflict model, such as Andrew Dickson White, were actually advocating for something quite different in their initial intent.

In the face of pernicious adherence to the conflict model, many theologians write about science and theology from an integrative standpoint, but not from a place of challenging orthodox theology. One of the most well known and frequently cited writers in this perspective is John Polkinghorne. A prolific writer and speaker on issues of science and Christian theology, Polkinghorne (as a particle physicist and an Anglican priest) attempts to reconcile the science/theology conversation, and does so quite articulately. He presents the ideas of science not as a contradiction of faith but as a series of metaphors that in the end boil science down to a crypto-apologetic for orthodox Christianity. While this might speak to people of faith who hold or have held a more literalist perspective, this is overall an unhelpful hermeneutic in that it only speaks to one way of thinking, that is, to those who already accept dogmatic theology and need to bolster its validity within the scientific milieu of Western society.

If the framework of 'science as crypto-apologetic for orthodoxy' is insufficient, then where might be found a helpful voice in finding a way through? Many authors are reaching beyond a simple 'which idea is true?' polemic and realizing the shared human quest of exploring physical realities and the awareness of things beyond our knowing that shape us. In the third chapter, I will engage in dialogue with Michael Polanyi as a voice who presents a way through to more deeply engaging the conversation between science and theology. In his final work, "Meaning" (published in 1975) he states that throughout human history, scientific enquiry and theological discourse are simply two ways in which the human species makes meaning of experience. Though he wrote within the mid- to late-twentieth century, Polanyi's work is a bold yet embracing challenge to contemporary theological thought, and a more genuine synthesis of the functions of scientific thought and theological thought in human experience in the Western world. Both pursuits, Polanyi insists, need to be based in intellectual freedom if they are to be helpful and contribute to human flourishing.

In the fourth chapter I will explore two recent initiatives aimed at engaging young people in science and theology, one predominantly based in the UK, the other in the USA. Both are framed in the 'science and theology in conflict' understanding, and both attempt to prove the validity of orthodox Christian belief alongside a scientific worldview.

In the fifth chapter I will explore a proposed foundation of faith formation which engages the student in ritual, myth, metaphor, and meaning-making in the context of intellectual freedom, alongside other ways of meaning-making about the physical realities in which we live. I will draw on Pannenberg's *Wissenschaftetheorie,* and his theological understanding of our anthropological quest to understanding the Absolute, and Heinz Streib's reassessment of what should constitute the core elements of religious education in

our contemporary milieu. In the scientifically rich environment in which children and youth are formed in our education system and culture, religious education must find a new foundation and pedagogy that engages young people in an interactive exploration of human thought, spiritual life, physical realities and expanding knowledge.

Chapter 1

1. Roots of the Conflict Thesis in the interactions of Science and Theology

1.1 Problem of the conflict thesis

The conflict thesis is important to explore as it has fueled the public perception of the discourses in science and Christian theology in North America, both within and outside the Christian community, for the past century and beyond. The lines have been much more sharply drawn in the past forty years or so, with deeper entrenchments of the extreme positions. The nature of the conflict and the response of the different communities have birthed much-publicized winner-take-all debates[3], wholesale rejection (in media and popular books) of the metaphysical or any religious thought as ignorant superstition (on one hand) and extraordinary skewing of science to bolster Biblical literalism and fundamentalism (on the other).

When viewed in light of contemporary scholarship in the philosophy of science, metaphysics and theological writing, the perpetuation of the conflict thesis quickly becomes a straw argument that does not withstand much scrutiny[4]. Yet a concept of 'conflict' must be sustained if one sees only one perspective in a dualism as valid, so the extreme positions must, of necessity, sustain a contradiction between scientific and religious thought. A conflict model is, thus, self-perpetuating as extreme opinions on both sides continually seek to discredit the other: "…*Each side gains adherents partly by its*

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[3] McGrath and Dawkins have conducted public debates for well over a decade, to the point that each of them would be able to switch roles and accurately recite the others' arguments. It's not clear who benefits from these ongoing public rants, except their own financial position in reaping speaker's fees and promoting their books on the subject.

[4] Lindberg, David. "Science and the Early Church" in *God & Nature: Historical Essays on the Encounter between Christianity and Science*. Ronald Numbers, David Lindberg, eds. p 20.

opposition to the other, and both use the rhetoric of warfare"[5]. Particularly egregious is

the practice of co-opting the methodology of the opposing position in order to prove the

validity of one's own rigid views. The flourishing of Christian (so called) scientific

research institutes are a baffling example of those who maintain the inerrancy of the literal

interpretation of the book of Genesis and who have attempted most recently to make their

position scientifically viable through the structures and methods of science as if to appear

provable.[6] Such is the nature of a worldview which must hang on to literalist beliefs at all

costs, even to the point of embracing and convincing oneself of a notoriously flawed

methodology to sustain the appearance of validity. Rigidity in scientific thought exists at

the other extreme – that the knowable must be verifiable and provable, thus clinging to a

literalist view that there is one objective reality that can be proven with scientific,

biologically functional or mathematical means and all other human experience must be

rejected as false or meaningless.

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[5] Ian Barbour. *When Science Meets Religion: Enemies, Strangers or Partners?* Harper Collins, New York. 2000. p 8.

[6] Curiously, evangelical and fundamentalist theology in the last few decades has recognized that their claims to the veracity of scripture cannot stand up against scientific scrutiny and thus have sought to establish seemingly 'scientific' organizations which engage in research, scientific studies, publication and have staff and faculty with PhDs in scientific fields. Several organizations have emerged in the last 30-40 years with seeming scientific/academic credibility (such as Answers in Genesis, Institute for Creation Research (ICR) and Creation Ministries International, among others). They conduct geological and biological research and come to farcical conclusions, such as, the Grand Canyon was carved over a period of a few years with the retreating water of the flood – referred to in their literature as a 'global hydraulic cataclysm' as if to use those words instead of 'The Flood' makes their work sound more legitimate. Yet all of the publications of these organizations are widely discredited in that they publish no sound scholarly peer-reviewed journals, articles or books – the 'peer review' they claim is only from within their own circles and fundamentalist worldview and do not stand up to the scrutiny of their wider professions (geology, biology). Yet these practitioners of pseudo-science sustain an amazing following; the percentage of Americans who believe in young earth creationism is 38% overall, but close to 50% of those with only high school education. (Gallup, 2017, http://news.gallup.com/poll/210956/belief-creationist-view-humans-new-low.aspx accessed 15 May 2018.

1.2 Challenge to the Conflict Thesis

The history of the relationship between science and theology, however, is much more deeply nuanced and more of a constantly moving target than any of the extreme positions would imply. In *Beyond War and Peace*, historians Lindberg and Numbers challenge the notion that science and Christianity have always been at odds with one another:

> *"Christianity and science – as intellectual systems, as institutions, and as objects of personal commitment – have rubbed against each other, sometimes comfortably, sometimes with destructive force. In the future we must not ask, "Who was the aggressor?" but "How were Christianity and science affected by their encounter?" ...the encounter has been multiform, the range of effects enormous...influence has flowed in both directions... Christianity and science alike have been profoundly shaped by their relations with each other."*

Contemporary historians of science and religion (Numbers, Lindberg, Brooke) have challenged the conflict thesis as flawed, particularly as they explore the historical hinge points (Copernicus, Galileo, Darwin) that are often erroneously cited as the basis of the conflict.

1.3 Roots of the Conflict Thesis in the late Nineteenth Century

In the relevant historical literature, two volumes are consistently cited as being significant turning points, and the foundation of the conflict thesis in the historical discourse[7]. The first is the *History of the Conflict Between Religion and Science* by John William Draper, published in 1874. The other was Andrew Dickson White's provocatively titled

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[7] Certainly this is not the beginning of any sense of conflict. Schleiermacher challenged the skepticism of his day and the enlightenment's rejection of dogmatic theology (Peacocke, 19).

History of the Warfare of Science with Theology, 1896. Though Draper's work preceded White's, and outsold it, White's became more widely known and influential, owing in part to its origins as a public lecture series, its initial publication serially in Popular Science Monthly, and his impressive and enormous bibliography that contributed to the presumption of sound scholarship[8].

This might give the impression that White was attempting to shake loose the restrictive fetters of religion upon society, embrace a scientific worldview and leave religion behind as stifling, superstitious and anti-intellectual. Indeed, White is often cited as the poster-boy for the adversarial relationship between science and religion based in atheism[9]. Certainly, contemporary proponents of the conflict theory from a scientific perspective (e.g., Dawkins) maintain that theology has no place in intellectual enquiry, and that science proves (or almost certainly proves) that God does not exist.[10]

1.4 White's Intentions

In the preface to his *History,* however, White reveals the true intention of his writing. White, along with Ezra Cornell, was instrumental in founding a university in upstate New York in the late 19th century (which bears Cornell's name) within which intellectual enquiry could be freed from religious or political interference. This was not a unique movement – many universities such as Harvard and the University of Toronto, among others, were extracting themselves from religious influence. White was a firm believer

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[8] Lindberg and Numbers, *God and Nature.* 1986. Lindberg and Numbers both challenged White's scholarship and, despite this extensive bibliography, many of his historical references were highly one-sided and in some cases false claims to bolster his argument.
[9] John Hedley Brooke. *Science and Religion: Some Historical Perspectives.* Cambridge University Press. 2014. p 46.
[10] Dawkins, 1986, 2006

that knowledge should be pursued for knowledge's sake and for the benefit of human

flourishing, and not to advocate or uphold a particular religious doctrine or political

agenda[11]. White and Cornell were themselves both theists and strongly aligned with the

religion of their youth: Cornell a member of the Society of Friends (Quakers) and White a

"churchman" (as he refers to himself, indicating that he belonged to what would now be

known as The Episcopal Church in the USA.)

White is clear in his intentions that higher learning should not presuppose an outcome, or

be driven by an agenda. In other words, intellectual enquiry's purpose was to discover

what could be discovered, and not simply to bolster what we already know or believe.

This, according to White should include theological thought. His initial intention in co-

founding Cornell University was to openly explore all avenues of human thought and

discovery.

> *"Nonsectarianism was built into Cornell's founding document: "at no time shall the*
>
> *majority of the board be of any one religious sect, or of no religious sect." The*
>
> *charter later states, "persons of every religious denomination, or of no religious*
>
> *denomination, shall be equally eligible to all offices and appointments."*[12]

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[11] In *Science Faith and Society* (University of Chicago Press, 1949), Michael Polanyi explores this same quest from a scientific point of view, based on his encounters with scientists in Stalinist Russia, where the State had a strong vested interest in what scientific pursuits were explored, and only favoured those which had direct benefit to the purposes of the State, and not pursued as science for discovery's sake (or, science for discovery's sake was supported, until it contradicted the the aims and intentions of the State). It was upon this experience that he based his premise that both scientific thought and religious thought will only be the source of human flourishing in a climate of freedom of thought, rather than supporting political agenda. These ideas, and their implications for theology and faith formation will be further explored in Chapter 3 and 4.
[12] *http://news.cornell.edu/stories/2015/04/inside-look-cornells-charter
April 2015, accessed 19 April, 2018.* (a particular note is the fact that, as in the motto, the word "persons" is used instead of "men" – a gender inclusion that was not typical of his time.*)*

White was clear in the introduction to his work that his intention was to see religion enlightened by other academic pursuits of his day. He introduces his work with a description of his observation of a group of peasants gradually chipping away at an ice dam that blocked the Veda River. Small channels are created to open up the blockages to the effects of the spring sun, and gradually melt the ice dam so that it doesn't break all at once with catastrophic results down stream. For him, this stands as a metaphor for his intention:

> "*For behind this barrier (of outworn thought) also the flood is rapidly rising – the flood of increased knowledge and new thought; and this barrier also, though honeycombed and in many place thin, creates a danger – danger of a sudden breaking away, distressing and calamitous, sweeping before it not only out-worn creeds and noxious dogmas, but cherished principles and ideals, and even wrenching out most precious religious and moral foundations of the whole social and political fabric…*
> *…my hope is to aid–even if it be but a little—in the gradual and healthful dissolving away of this mass of unreason, that the stream of 'religion pure and undefiled' may flow on broad and clear, a blessing to humanity."*[13]

White's intention was to liberate ideas from dogma. It was not to do away with Christianity, but to free it from superstition, and freeing intellectual enquiry from restrictive control, and create a treatise against the foundations of knowing based in superstition, or "medieval conceptions of Christianity" (White, p ix).

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[13] Andrew Dickson White. *A History of the Warfare of Science with Theology in Christendom.* 1896. Reprinted unabridged by Peter Smith, Gloucester, Mass. 1978. p vi.

"So far from wishing to injure Christianity, we (Cornell and White) *both hoped to promote it; but we did not confound religion with sectarianism, and we saw in the sectarian character of American colleges and universities as a whole, a reason for the poverty of the advanced instruction then given in so many of them. It required no great acuteness to see that a system of control which, in selecting a professor of Mathematics or Language or Rhetoric or Physics or Chemistry, asked first and above all to what sect or even to what wing or branch of a sect he belonged, could hardly do much to advance the moral, religious, or intellectual development of mankind."[14]*

Despite his clarity of vision, and the hope that *"the reasons for the new foundation seemed to us, then, so cogent that we expected the co-operation of all good citizens, and anticipated no opposition from any source",* the opposition was swift and aggressive. Part of the reason for White publishing his two-volume tirade against literal interpretations of scripture and superstitious thinking was in reaction to the onslaught of critique that was leveled against his and Cornell's vision by the religious, political and social establishment of his day (White, vii.) Scores of politicians, religious leaders and academics denounced the establishment of Cornell University.

Contemporary authors have interpreted White through an adversarial lens, and he is painted as an enemy of religious belief and promoter of atheism. On close inspection, one can see that this is not the case.

1.5 John William Draper

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[14] ibid, p x.

Draper's *History of the Conflict Between Religion and Science,* published in 1874

expressed a particular partisanship in its direct critique of the Catholic Church. Draper's

writing was a product of the cultural forces of his day. It must be read (according to

Brooke) with critical eyes as Draper's work was more of a reaction to and a protest of

papal authority and infallibility (established at the First Vatican Council of 1870) and the

encyclicals of his day (including *Quanta Cura* of 1864, the fallout of which established

the perception in both Catholics and non-Catholics that the church was decidedly opposed

to modernity). Draper's response was to mine the historical record for times when the

authority of the Catholic Church seemed to stifle intellectual and scientific advancement.

Draper did not allow for any nuance in his representation of history, and favoured

perspectives that made the Catholic Church look like an antagonist of scientific

exploration[15]. In this way, Draper's work has also been perceived as a catalyst to the

'science and religion in conflict' model, even though what he was principally challenging

was the exercise of authority of the Catholic Church.

In spite of their intentions, particularly White's, the construction of their arguments is

based on extreme or sensational positions, and fails to include reference to those through

history who have understood the discourse as complementary rather than mutually

exclusive[16]. The sheer volume of White's sources and references imply an exhaustive

research, but it was research that was one-sided. Such was his frustration with the

dogmatic thinking of his time that he attempted to silence it by pointing out the triumphs

of scientific thought over dogmatism. White's far-seeing vision at Cornell was to establish

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[15] John Hedley Brooke. *Science and Religion: Some Historical Perspectives.* Cambridge
University Press. 2014. p 46.
[16] ibid, p 47.

an amiable and open partnership between scientific, political, social and religious thought. The effect, however, was to further polarize the discourse and add fuel to entrenched positions on both sides.

1.6 The Inerrancy Movement and Further Development of the Conflict Thesis in the late Nineteenth and early Twentieth Century.

While there was no direct intersection between White's work and the concurrent movements towards scriptural inerrancy, they are both intimately part of a broader academic, political and theological context that impacted much thought and discourse in this period in America. They are relevant to this thesis in that they laid the foundations for firmly establishing a conflict model as the pervasive narrative in Protestant evangelical Christianity.

The Inerrancy Movement (that had some of its roots at Princeton Seminary) was in part a reaction to the models of Biblical criticism emerging in Europe in the late 19th century. Historian Mark Noll locates the sources of some of the American Protestant reactivity to European ideas as being rooted in the operating theology and politics of the American Revolution. According to Noll, the cultural experience of rejection of European authority/influence created a pervasive worldview that reached into political, academic and theological thought throughout the two centuries that followed it:

> *"The early history of the United States also witnessed a number of specific developments relating to Scripture and its use. Especially important was the conviction that…the Bible was a uniquely powerful agent for evangelism, training in godliness, guidance to churches, and – also – the construction of social order. Americans had given up many of the historical props of European Christendom,*

including state churches, the iron fist of inherited precedent, and automatic deference

to tradition. But in the Scriptures, which were increasingly accessible to all who

could read, the nation's believers possessed a supreme religious authority that

provided the guidance necessary for personal spiritual growth and the development

of strong local churches, as well as the public norms for a republican society."[17]

In 1876, Hodge and Warfield of Princeton published a paper in the Presbyterian Record

entitled "Inspiration" which set out to defend the belief that the Scriptures were "without

error in all that they revealed".[18]

It is interesting to note that, like many of his contemporaries, Warfield was never an

opponent of science and was a great pains later in his career to show how inerrant views of

the Bible could integrate most of evolutionary theory. Nevertheless, Noll demonstrates

that the roots of schismatic thinking about science and religion were based in this period.

While not rejecting religion outright, White was among numerous other founders and

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[17] Mark A. Noll. "Evangelicals, creation, and scripture: legacies from a long history." *Perspectives on Science and Christian Faith*, vol. 63, no. 3, 2011, p. 147-158.
http://link.galegroup.com.proxy1.lib.uwo.ca/apps/doc/A264761196/. Accessed 1 Nov. 2018.

[18] Archibald Hodge and Benjamin Warfield. "Inspiration". *The Presbyterian Record*, 6 (April 1881), pp 225-60. Warfield and Hodge's essay is widely seen as the founding of the Inerrancy Movement, which retained strength throughout the 20th century. Warfield and Hodge's assertion was that scripture should not be used to explain science:
 "It is true that the Scriptures were not designed to teach philosophy, science, or ethnology, or human history as such, and therefore they are not to be studied primarily as sources of information on these subjects." However, they go on to say, places where scripture appears to be coherent with the discoveries of science are testimony to the divine inspiration of Scripture. Later Inerrancy statements, such as the Chicago Statement on the Inerrancy of Scripture of 1978 were much more rigid in asserting that where science and scripture seem to disagree – particularly around the hinge points of creation and flood – scripture must be seen as authoritative. *"Article XII We affirm that Scripture in its entirety is inerrant, being free from all falsehood, fraud, or deceit. We deny that Biblical infallibility and inerrancy are limited to spiritual, religious, or redemptive themes, exclusive of assertions in the fields of history and science. We further deny that scientific hypotheses about earth history may properly be used to overturn the teaching of Scripture on creation and the flood." (Chicago Statement on the Inerrancy of Scripture, 1978).*

presidents of universities who strove to create the modern university as a place that was not beholden to strict adherence to Biblical precepts.

> *"By the 1920s, however, it became clear that much of the evangelical community was alienated from the American research university and its aggressive promotion of scientific research. To many evangelicals, research universities were places that popularized ideas destructive of Christianity and where those ideas often seemed to drive out all other contenders…they were institutions dominated by anti-Christian principles. For many evangelicals, therefore, the conviction spread that the modern research university defines enemy territory that can be explored only with the greatest caution and only with defenses constantly on guard for intellectual battle."[19]*

Thus were the lines between science and religion definitively drawn in the sand in American Protestantism, and it is from these confrontational origins that the contemporary understanding of science and religion as being in conflict emerges.

Seen in this light, the Canadian context – while similar in its intentional separation of church and academia in the 19th century[20] – did not experience the same history of revolutionary rejection of European values, tradition and models of authority. Nor did it embrace republican (lower case r) values rooted in the creation of social order based in the authority of scripture. In recent decades, Canada has certainly felt the effects of the conflict model in science and religion (owing to our proximity and the American influences in almost all aspects of our political, social, cultural and religious life) but

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[19] Mark A. Noll. "Evangelicals, creation, and scripture: legacies from a long history." *Perspectives on Science and Christian Faith*, vol. 63, no. 3, 2011, p. 155

[20] The establishment of the University of Toronto as an example, which had been founded in 1827 as King's College and affiliated with the Church of England for its first 20 years, but established itself as a secular university in 1850 owing to Reformist political pressures.

never to the same extent as America, where the conflict was played out in schools, courtrooms, churches, and political/educational policies throughout the twentieth century. Based on this strong - arguably global - influence, the American premise of 'science and religion in conflict' has shaped much of Western discourse in the subject for the past century. Out of this has emerged a primary narrative that has shaped the way popular culture, church, education and social attitudes engage with science and religion. The dinosaur-believer from the introduction is a product of this journey, with about a hundred and fifty years of a conflict narrative being fed by social, educational, religious and political attitudes behind him.

Other influences are drawn into the discourse. Scholars and writers (both secular and theological) over the past fifty years have referenced the pivotal nature of events such as the 1859 publication of Darwin's *Origin of Species*[21] and the Scopes trial of 1925 as the starting points for the conflict thesis. Barbour maintains that *"...the popular image of 'the warfare of science and religion' is perpetuated by the media, for whom a controversy is more dramatic than the more subtle and discriminating positions between the extremes of scientific materialism and biblical literalism."*[22]

The way forward in the discourse then is to engage the nuances of the dialogue in a more publicly accessible way. Though scholarship has most certainly drawn towards a reimagining of the discourse, popular perceptions remain grounded in the conflict model.

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[21] Though, *The Descent of Man*, published 22 years later was probably much more provocative to this argument in that it focused specifically on the theories and processes of evolution applied to human beings.
[22] Ian Barbour. *When Science Meets Religion: Enemies, Strangers or Partners?* Harper Collins, New York. 2000. p 7.

1.7 Integrative Visions

Shortly after the publication of White's book, social philosopher George Albert Coe laid the foundations of the religious education movement in the USA. In 1903 he launched the inaugural meeting of the Religious Education Association, and later in 1917 published *A Social Theory of Religious Education*. Coe supported the inclusion of contemporary sciences into religious education.

> *"We must carry the unsectarianism of science into our analysis of what is specifically religious. Psychology, sociology, and experiment must speak in their own tongue with respect to the most intimate things in religious experience."[23]*

For Coe, science must be deeply integrated with religious education.[24]

Coe's vision for such an education has, however, been lost in a sea of adherence to the conflict thesis – potentially reinforced by the rise of Pentecostalism and fundamentalism that were also emerging in this precise time frame.

The impact of the conflict narrative is that religious education in the intersections of science and religion has adopted an adversarial tone. The purpose of religious education in this area in the past decades has been to validate classical religious belief (specifically, Christian belief) within a scientific age. This thesis proposes that, rather than affirming the provability of religious thought, the role of religious education is to expose students to broad ways of thinking and understanding. Students should be encouraged to – in the original vision of White – explore science, history, philosophy and theology in mutually informative ways, and engage theology and religious practice as part of the broader human quest for meaning-making.

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[23]George Albert Coe, *A Social Theory of Religious Education.* New York: C. Scribner's Sons, 1917. 292.
[24] ibid, 144.

The evolution of the science-theology discourse through the 1980's and 1990's brought a host of scholarly writers who have attempted a more informed synthesis of scientific and religious thought: Ian Barbour (1989), John Polkinghorne (1982 and throughout the 90's and 2000's), Arthur Peacocke (2001), Paul Davies (1992), Alister McGrath (1999 and beyond). Polkinghorne is one of the most celebrated and published of writers on science and theology from a Christian perspective. Yet he never steps much past the safe and solid ice along the shoreline of classical theology. In the next chapter, I explore Polkinghorne's (and others) works to explore how the crypto-apologetic has both helped and hindered the progress of the exploration of scientific and theological thought.

Chapter 2

2. John Polkinghorne and his Dialogical Model

I have proposed in the preceding chapter that the conflict theory has not served religion's

engagement with science very well, and have also explored the roots of the conflict

narrative in American Protestantism. Despite the prevalence of the conflict theory in

popular culture, which pits absolutes against one another in an attempt to define a

'winner', it is far from the actual academic discourses in science and theology and, in

those circles, has long since been mostly discarded. More and more academics from

multiple perspectives are engaging the physical and metaphysical from a variety of

positions, leaning much more consistently to either an independence model (e.g., both are

valid positions that talk about different aspects of knowing in human life) and more

significantly, a dialogical model.

2.1 Dialogue model and John Polkinghorne

In the ongoing discourse, both popular and academic, within the positive intersections of

science and theology, one of the most prolific writers to emerge over the past thirty years

is Rev Dr. John Polkinghorne. He is celebrated as a scholar-scientist-theologian who has

written extensively with the explicit aim of moving beyond the conflict theory in the

science/theology conversation. He lands firmly on a dialogical approach in the

conversation. He has a strong following within the ecclesial and academic theological

community as a 'first reader' in engaging the discourse, though many of his later books

are written from a much more academically rigorous standpoint and are written about

specific theological frameworks (e.g., eschatology, Trinitarian theology). These books

draw heavily on scientific understandings (most particularly, Polkinghorne's area of

expertise - particle physics) to explore these ideas. Polkinghorne's work encompasses an impressive, scientifically rigorous and well-written interconnections of physics with theology. In brief, his premise is the 14 billion year old universe that God made is one within which natural processes, initiated in creation by God, allow creation to "make itself": it does so both physically (by means of cosmology and celestial mechanics, and later, genetics and natural selection), and morally, as humans make individual choices, good or bad. Natural evil exists (disease, natural disasters such as earthquakes) and Polkinghorne cogently makes what he calls the 'free process defense' (that is, the natural world is permitted the same 'freedom' to express its nature just as humanity is). One of Polkinghorne's most frequently made conclusions is the ultimate unprovability and counter-intuitiveness of quantum theory, despite the experimental and mathematical indicators of the theories of particle physics, and equates this with the ultimate unprovability and counter-intuitiveness of God (despite humanity's theological quest over thousands of years). Both disciplines, he frequently states, trade in "motivated belief".

Close reading however reveals that, though Polkinghorne wishes to be seen as a broad and 'intellectually daring'[25] thinker and critical realist, in the end he defaults squarely back to the dogmatics of evangelical Christianity and refuses to depart from them. By definition, it is hard to see how he identifies as a critical realist without altering the definition of that term. He approaches the conversation of science and theology as a foundationalist[26] with the view to, in the end, advocate for the validity of a strictly evangelical Christian worldview and belief. Though he considers how those beliefs[27] could possibly be

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[25] Polkinghorne, 1991.
[26] I will define how I am using this term later in this chapter.
[27] These beliefs include the miracles that form the core of Jesus' story: virgin birth, bodily resurrection and ascension.

challenged by scientific principles he does not allow his own beliefs to be changed by the

encounter with expanding theological and philosophical views which have flourished in

the twentieth and twenty-first centuries. In this chapter I will explore Polkinghorne's

work, and challenge his self-identity as a theological critical realist when compared to the

ways in which the term is used by post-foundationalists such as J. Wentzel Van

Huyssteen. Polkinghorne is also patronizingly dismissive of process theology, yet the

latter actually engages in the 'intellectual daring' that Polkinghorne wishes to ascribe to

himself, and allows theology to be changed by the encounter with scientific

understanding, human experience and contemporary philosophy. At the end of the chapter

I will consider ways that the approach that Polkinghorne advocates in the science/theology

discourse is unhelpful to contemporary approaches and pedagogies in Christian Education.

2.2 Brief Biography

Polkinghorne was born in 1930. He completed his undergraduate studies in mathematics

at Cambridge and was senior wrangler[28]. He was also an active member of the Cambridge

Inter-Collegiate Christian Union (CICCU), a student organization that had, at the time he

was a member, only recently detached itself from under the broader umbrella of the

Student Christian Movement and firmly identified itself as an evangelical group. To this

day, CICCU obliges anyone holding any position of responsibility to sign a belief

statement as a condition for membership[29] (and may be dismissed from a position if their

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[28] A title conferred, since the 18th century to the present day, on the Cambridge undergraduate who achieves the highest overall marks in mathematics.

[29] Which includes, among other statements of their Doctrinal Basis, the belief that
- Scripture is inspired, infallible and the supreme authority in matters of belief and human behaviour.
- the Fall rendered humankind sinful and guilty, humanity is subject to God's wrath and condemnation.

beliefs appear to waver[30]). This doesn't bode well for someone who wants to self-identify as a broad thinker, but it is clear from Polkinghorne's future alliances that he maintained his evangelical and theologically orthodox position throughout his life.

Academically, he did graduate work under Paul Dirac. For twenty-five years, he was a professor in mathematical physics and a researcher in theoretical physics in the US but principally in the UK at Cambridge. In 1979 he left his scientific career to study theology and in 1982 became an Anglican priest. He worked in parishes in Southern England for about five years, and became the president of Queen's College, Cambridge. Since 1979, he has written extensively[31] on science and theology based on a dialogical approach.

2.3 Drawing Connections Between Scientific and Theological Methodologies

Polkinghorne is one of the best-known and most cited writers in the field who is writing from the perspective of evangelical Christianity. In a period (last third of the 20th century)

- Jesus was born of a virgin and raised bodily from death, ascended bodily into Heaven and reigns over earth and heaven.
- The only redemption is through the penal substitutionary atonement of Jesus Christ and He is the only mediator between humans and God,
- Belief in Jesus Christ is the only means of receiving God's favour.
- The Lord Jesus Christ will return in person, to judge everyone, to execute God's just condemnation on those who have not repented and to receive the redeemed to eternal glory.

 <http://ciccu.org.uk/about/beliefs> accessed 29 June 2018.

[30] <http://ciccu.org.uk/assets/files/CICCU-constitution.pdf> accessed 29 June 2018

[31]Polkinghorne has written almost thirty books to date, or roughly one every 15 months. Close reading of his work reveals that, in reality, he has mostly written the same book multiple times, as his lines of argument, metaphors, examples and even turns of phrase are remarkably similar between the books, though they shift somewhat in primary focus, based on titles. The language and tone varies considerably between biographical/personal statement (*The Way the World Is*); chatty and familiar - friendly to the lay person in either field *(Quarks, Chaos and Christianity);* scholarly and scientific *(Reason and Reality);* and academically theological *(The God of Hope and the End of the World, Science and the Trinity)* though in essence, the same content appears in all. In an interview in 2008 he spoke about the five years that he spent in parish ministry and he found it intellectually stifling – perhaps his prolific writing was initially a way of dealing with that.

where scientific materialism and the conflict model was ascendant in popular discourse, Polkinghorne's writing, like other scientists-turned-theologians of his time, strongly challenged the conflict model and the notion that religion and science are antithetical. He sought to demonstrate that science and theology are intellectual cousins and refuted the conflict model by trying to show how much the two disciplines have in common with one another.

Scientists, he states, who explore theology see a kinship between both disciplines, in that:

- Science and theology, in his view, both feature a certain degree of 'intellectual daring' in their approach, for "neither is based on incontrovertible grounds of knowledge." (This is perhaps true, though lived out in practice in very different ways. While science thrives on not being based on incontrovertible ideas, and submits itself to the rigors of falsification, theology only grudgingly accepts that its basis might not be incontrovertible. In the realm of Christian orthodoxy, from which position Polkinghorne is speaking, there is actually much that he considers incontrovertible. This renders this connection he is trying to make between the methodology of science and theology thin at best.)

- In both science and theology, one must sustain a commitment to a particular worldview (which must be open to being corrected) but is a necessary starting point in the search for "truth" (though he never defines what he means by that word).

Polkinghorne asserts the ideas of the intelligibility of the universe (that we can understand it), the anthropic principle and the sense of a general universality of human morality as indicators of God's influence in the world[32]. He refutes the idea (along with the majority of scientists in our current era), that science is completely objective. There is always an interpretive lens on the results of experimentation, observation, and experience. These interpretive lenses are influenced by social and cultural contexts, personal bias based in individual experience, and prior knowledge. He describes theology in the same way – it is the result of the interpretation of (spiritual) experience, encounter with sacred text, prior knowledge, and the social and cultural contexts. Polkinghorne, however, is clear that conclusions drawn from the interpretation of spiritual experience (and scripture) must deliver one to the conviction that evangelical Christianity is the sole correct theistic belief. This makes his writing problematic, in that he does not actually allow for interpretation of spiritual experience, rather, it must fit a particular definition of religious belief.

Polkinghorne is not writing for those engaging in open discourse about contemporary understandings of the material universe and theism, but rather to bolster and advance a particular theological understanding of Christian theology. Thus, he is not writing about a broad approach to science and theology but writing for a limited audience of those who wish to continue to adhere to a specific and incontrovertible theology and need a scientific basis (or series of metaphorical parallels) to do so. From such an informed source as a member of the Royal Society and professor of mathematical physics at Cambridge University, the evangelical position promotes Polkinghorne as one of the silver bullets in

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[32] John Polkinghorne. *Science and Theology: An Introduction*. Fortress Press. Minneapolis, Minn. 1998. pp 71-83.

its arsenal of apologetics to affirm the veracity of classical theological positions alongside contemporary scientific understandings.

Polkinghorne tries to point out where the epistemology and methodology of science and religion are the same in broad strokes. Polkinghorne makes the point that most of the writers engaging the science-theology 'debate' (his word) are scientists first, theologians second. A few theologians have pursued the integrative discourse with science, and Polkinghorne cites Thomas Torrance (how something can be known and how we actually know it) and Pannenberg (field theory and the whole having priority over the parts has "theological significance": *"God has to be conceived as the unifying ground of the whole universe if he is to be conceived as the creator and redeemer of the world"[33]*). Though he laments that more theologians are not taking up the discourse with science, he does allow that scientists taking up this discourse are more convincing because of their credentialed credibility and authority to speak to with and on behalf of science.

Polkinghorne also tries to draw a parallel between theology and science as both dealing with entities that are not directly observable, and thus must be described solely using model and metaphor. The reader must bear in mind that Polkinghorne's specific field deals in particle physics, and most definitely entities that are not directly observable. However, the principle points of historical contention between scientific and theological ideas were most surely borne out in the observation of actual physical realities (planetary motion, biological observation, fossil record, cellular biology) which contradicted and

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[33] Wolfhart Pannenberg, quoted in Ernest L. Simmons. "Towards a Kenotic Pneumatology: Quantum Field Theory and the Theology of the Cross" in *Expanding Humanity's Vision of God: New Thoughts on Science and Religion*. Robert Herrman, ed. Templeton Foundation Press, 2001. p 239.

challenged accepted philosophies and theologies in their time. In this instance, almost all scientific realities are in fact both directly observable and some experimentally repeatable, while theological ideas are neither observable nor experimentally repeatable. In order to prove the validity of theology, Polkinghorne is attempting to show how similar theology really is to science by applying limited descriptions from his own specific field. Polkinhorne's science deals with probabilities, non-physicality, non-observability and thus he strays too far into conflating this with theology, which also, he says, deals in uncertainty, non-physicality and non-observability.

> *"...general lessons of interest to theology might arise from (the) intellectual upheaval brought about by the discovery of the elusive and fitful subatomic world of quantum theory. Everyday reasonableness is seen not to be the measure of all things; the world has proved strange beyond our powers of anticipation. If that is true for physics, it is doubtless true for theology as well."*[34]

> *"…the profound degree of relationality that science has found to be present in the fabric of the physical universe is certainly congenial to a Trinitarian way of thinking."*[35]

This could be read to mean that, whatever ways in which we describe God in our orthodox theologies; God could be far stranger and further beyond our powers of anticipation. And yet, this is not where Polkinghorne goes with his argument, ever. In fact

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[34] John Polkinghorne. *Reason and Reality.* SPCK, London, 1994. p 3.
[35] John Polkinghorne. *Science and the Trinity.* Yale University Press. New Haven, Conn. and London. 2004.

he has highly critical and scathing things to say about any theologian who departs from the stream of Christian orthodoxy, and fails to consider any other theological positions or understandings from other religions, in how we understand the nature of God. As such, his point of view can only stand alongside evangelical/orthodox Christianity. Despite his appearance of openness to considering other possibilities of the nature of God, his foundational hermeneutic is the assumption of the correctness of evangelical Christianity (see footnote 29). If one does not accept this narrow view of theism as a basic starting point, all of Polkinghorne's writing is possibly at risk of being immediately dismissed as irrelevant to the broader discourse.

Despite Polkinghorne's continuous caution against the temptations to apply the God of the Gaps (that is, God is the explanation to all the pieces of the physical world which are beyond our understanding or fills in the 'gaps' in our knowledge), nevertheless, he treads close to applying that frequently to the notion that particle physics shows the world is more mysterious than we thought, so could not the possibility of God exist within such mysteriousness.

2.4 Critique of Polkinghorne's use of Scientific Discourse as Crypto-Apologetic.

Polkinghorne has allied himself with projects and organizations whose aim is to defend the plausibility of traditional evangelical Christianity through a scientific lens. This model attempts to provide an antidote to the conflict model by stating that scientific understanding does not have to contradict Christian orthodoxy, rather, science can be used to show that classical Christian belief is valid. This is not a dialogue, though Polkinghorne is described as one who operates out of a dialogical model. It is not a dialogue if one

position is using the other to prove its own validity, and will not sway from certain incontrovertibilities.

Polkinghorne acknowledges the dialogical contributions by other, newer writers in providing new lenses to explore theology in the 20th century (McFague, Whitehead,) yet he is dismissive of them as they depart from classical understandings of Christianity. He also engages with writers who are, like himself, exploring the intersections of science and theology (Peacocke, VanHuyssteen), but only insofar as they adhere to evangelical theology. Where Peacocke departs from that (in his revisionist approach to the intersections of science and theology) Polkinghorne is equally dismissive.[36]

Repeatedly, Polkinghorne engages in logical leaps between scientific understandings (such as questions about the trajectory of the cosmos)[37] and his resulting theological conclusions that result in some extraordinary sophistry. It is not that he intends to *deceive* by this (as the definition of sophistry might imply) but he is very intent on *convincing* the reader of the rightness of his conclusion, by drawing on his considerable talent with scientific exposition, and by assuming that the reader already agrees with his conclusions, and merely needed the links back to scientific language to make a convincing metaphorical connection.

> *"We need to embrace a cosmic hope as well as a personal hope, for it would be far*
> *too anthropocentric simply to regard this vast universe as being of concern to God*
> *only as the backdrop for a human drama which has just started after an overture*

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[36] A curious read of this is in pages 20-25 of Polkinghorne's Science and the Trinity: The Christian Encounter with Reality (2004) where Polkinghorne alternately by paragraph embraces and shuns Peacocke's position where it seems to affirm or contradict orthodoxy.

[37] The theories of the cosmological end of the universe, known colloquially as the Big Crunch, Big Freeze, or Big Rip.

lasting fifteen billion years. (footnoted): One reason for believing in the empty tomb is that its picture of the risen Lord's glorified body being the transmutation of his dead body, speaks to us of a destiny for matter as well as humanity."[38]

"If there is hope, either for the universe or for us, it can only lie in the eternal faithfulness of God. ...Of great importance here are the various New Testament passages that speak in an astonishing way of the cosmic significance of Christ (John 1; Romans 8; Colossians 1). Also important, I believe, is the witness of the empty tomb, for the fact that the Lord's glorified body is the transmuted form of his dead body speaks to me that in Christ there is a destiny not for humanity only, but also for matter, and so for creation as a whole."[39]

While that is helpful for those who hold this particular position, it is not a broadly appealing engagement with Christian theological thinking (which is far more than western evangelicalism) and in the end, Polkinghorne's readers may feel duped by realizing that they have been reading an extended tract and apologetic.

In engaging quantum theory with theology, he dismisses the attempts by other writers to draw any metaphorical connections between quantum and theological ideas, stating that quantum theory's interconnectedness and elusiveness is for some writers to be in closer

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[38] *Reason and Reality*, p 82.

[39] *Science and the Trinity*, p 86. An interesting observation is that in the first quote, from a book written in 1991, Polkinghorne says that the transmutation of Jesus' body **'speaks to us'** of a specific destiny, whereas in 2004 – after years of critique of the crypto-apologetic nature of his writing, he makes the same point in a more subjective way, and specific to his own personal belief rather than prescribing belief more broadly by saying the same concept **'speaks to me'** of this destiny. The change from 'us' to 'me' is, I think, very intentional. Nevertheless, the majority of the 2004 book does not sustain this nuanced approach.

accord with Eastern religions, or with other Christian theologies such as process theology. In defense of his own position, Polkinghorne states, "It is all too possible to exaggerate the 'looseness' of quantum mechanics. One of its early triumphs was to explain the *stability* of atoms and the *structure* of the periodic table of the elements" and goes on to call the process theology position an unconvincing 'half truth' and the exploration of quantum theory with Eastern philosophy as a failed assimilation. Following on from his dismissal of other theological or metaphysical engagements with quantum theory, he attempts to demonstrate that the scientist and the theologian must not depart from the inherited tradition. (I have underlined words in the following quote to show where Polkinghorne's lines of reasoning nudge towards the rightness of only one specific theological position):

> *"The moral for theology resulting from this tangled tale of physics might be thought to be that the former is not the only subject which has difficulty in finding a <u>consistent basis for its thinking</u>. If our encounter with the physical world is perplexing, our encounter with the divine can scarcely be expected to yield to ready rationalization...Quantum physicists must continue the search for a <u>proper interpretation</u> of their theory, whist <u>holding fast</u> to the brilliant and successful understanding it has yielded into many aspects of physical process from why atoms are stable to why stars shine. Similarly, theologians must seek the most coherent account of the nature of God and of his ways with humankind, whilst all the time <u>respecting the accumulated insights preserved in Scripture and tradition</u>."*[40]

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[40] ibid.

In other words, the implication is that one cannot have new thoughts about the nature of God, God's relationship to creation, and humanity's place within it, if those ideas conflict with inherited tradition.

Polkinghorne repeatedly dismisses Christian theological viewpoints other than evangelicalism, though he places himself slightly to the left of Fundamentalism. While he laments Biblical literalism applied to the book of Genesis, he is perfectly content to apply literalism to every other part of Christian Scripture.

There is a diversity of Christian theological positions from a wide variety of traditions in the Christian West. Any contemporary theology must come to terms with not only that, but the plurality of religious belief in the Western world (through multi-culturalism) throughout human experience. In an interview with Cambridge historian and anthropologist Alan MacFarlane in November 2008, he was questioned on his position on pluralism:

> *"I think the second biggest problem of religious belief is to think about the diversity of the world's faiths; I certainly don't think that Hindus and Buddhists are all damned; that is a very terrible and crude mistake about the mercy of God; I do believe that in the end all must come to God through Christ because I believe that He is the unique link between the life of Divinity and the life of creatures, but that doesn't mean that only people that know Christ by name in this life are going to be able to cross that bridge; I am puzzled and disturbed by the diversity of the world's faiths; in one sense they are all speaking about the same domain of experience, but*

they say such different things about it; they have things in common - all value

compassion, mystic encounters - but they also say such different things…"[41]

Polkinghorne is able to consider – though ambiguously – the possibility of different religious traditions, but in terms of Christian theology, as stated above, he is dismissive in his treatment of other theologians outside of those who hold the same position as himself. Those readers who might be sympathetic to contemporary and non-traditional theology would find his lack of engagement off-putting.

In this same interview, he goes on to, again, try to draw a parallel conclusion based on science to say that the scientific community across the world has worked ecumenically to explore the depths of quantum theory and particle physics, yet in all parts of the world there is great variance in how human beings perceive metaphysical understandings. He seems genuinely perplexed by this.

> "*I think we are just beginning to struggle with this problem because the multi-faith, multi-ethnic, nature of our society means that people of other faiths are our neighbours, and we can see that they have an authenticity in their spiritual life that is not to be gainsaid, nevertheless there are these clashes of belief.*"

2.5 Polkinghorne and Critical Realism

Polkinghorne maintains that his approach to the science-theology discourse is as a critical realist. He ascribes to the same definition and self-identity of theological critical realism

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[41] http://www.alanmacfarlane.com/DO/filmshow/polkinghornetx1.htm accessed 15 July, 2018.

defined by Alister McGrath in *A Scientific Theology*[42]. Close reading of critical realist

philosophy (Bhaskar) and theological critical realism (Bhaskar interpreted by McGrath)

exposes a problem in this self-identification. This is not limited to Polkinghorne, but he is

one of the principal authors in the area of critical realism in theology and thus his claim to

critical realism is worth investigation.

To summarize briefly, critical realism (CR) attempts to address the problems that science,

philosophy and theology encounter in the relativizing perspective of postmodernism[43]

(that is, the subjectivity and interpretive nature of our experiences). Critical realism is a

philosophy concerned with ontology, that is, the philosophy of being, or what things *are*,

independent of our apprehension or experience. CR says that one cannot reduce statements

about the world (ontology) to statements about our knowledge of the world (which is

epistemology). CR also maintains that there is an objective reality that exists outside of

the perception or experience of the knower.

> *"...in order to maintain the intelligibility of scientific understanding, particularly the*
>
> *fallibility and transformation of human knowledge, (critical realism) holds we must*

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[42] Alister McGrath. *A Scientific Theology,* Vol 2: Reality. T & T Clark. London. New York. 2002

[43] A helpful concise definition for the purposes of this thesis is *'Postmodernism is largely a reaction to the assumed certainty of scientific, or objective, efforts to explain reality. In essence, it stems from a recognition that reality is not simply mirrored in human understanding of it, but rather, is constructed as the mind tries to understand its own particular and personal reality. For this reason, postmodernism is highly skeptical of explanations which claim to be valid for all groups, cultures, traditions, or races, and instead focuses on the relative truths of each person. In the postmodern understanding, interpretation is everything; reality only comes into being through our interpretations of what the world means to us individually. Postmodernism relies on concrete experience over abstract principles, knowing always that the outcome of one's own experience will necessarily be fallible and relative, rather than certain and universal...Postmodernism denies the existence of any ultimate principles, and it lacks the optimism of there being a scientific, philosophical, or religious truth which will explain everything for everybody - a characterisitic of the so-called "modern" mind. The paradox of the postmodern position is that, in placing all principles under the scrutiny of its skepticism, it must realize that even its own principles are not beyond questioning.'* https://www.pbs.org/faithandreason accessed 6 July 2018.

separate epistemology (knowledge, systems, thoughts, ideas, theories, language…)
from ontology (being, things, ontics, existents, reality, objects of investigation). This
distinction between what critical realism calls the transitive (the changing knowledge
of things) and the intransitive (the relatively unchanging things which we attempt to
know) is a critical distinction which runs throughout critical realism."[44]

For evangelicals such as McGrath and Polkinghorne, who wish to buttress their own absolute convictions of the rightness and universal applicability of evangelical Christian theology, critical realism has a strong appeal in that one of its principles is that there is an ontological reality that exists apart from our knowledge of it. For those who wish to espouse an orthodox theology of an omnipotent God, revealed in one specific and universal way to humanity (in the person of Jesus Christ), this is a helpful philosophical starting point – after all, how does one argue with ontology. Bhaskar's critical realism, applied to theology as McGrath does, allows McGrath and Polkinghorne to claim God as understood through an evangelical Christian lens as the intransitive ground of all theological thought. For both Polkinghorne and McGrath, theological critical realism thus begins with the *a priori* and incontrovertible ontology of God revealed in the person of Jesus Christ, and the associated theological positions of fall, sin and corruption, redemptive violence of crucifixion, bodily resurrection and final judgment. J. Wenzel Van Huyssteen challenges this misappropriation of critical realism:

"*I have…argued against the uncritical, superficial transference of realism in science*
to the domain of religious belief and to theology as reflection on the claims of this
belief. In a qualified or weak form of critical realism in theology, the focus in only
on the very limited epistemological conviction that what we are provisionally

[44] https://centreforcriticalrealism.com/ accessed 5 July, 2018.

conceptualizing somehow really exists. "Critical realism and God" in this context becomes an attempt to find a promising and suggestive hypothesis that can help us deal with some of the traditionally realist assumptions of the Christian faith within a postmodern context. A qualified or weak form of critical realism, therefore, does not at all offer a strong defense of theism, but attempts to deal with and make more plausible the cognitive claims of religious language and theological reflection."[45]

Because Polkinghorne presupposes the existence of God *specifically* as revealed, known, described and existing in concert with evangelical Christian theology he instantly disconnects his argument from anyone, including a broad range of Christians, who do not agree with that as a foundational (incontrovertible) position. Because of this, (and though he attempts to argue to the contrary), I would maintain that Polkinghorne *is* a foundationalist in that he stands on his specific theology as an indisputable reality. Polkinghorne identifies himself as a critical realist because his incontrovertible theology *is*, for him, an ontological reality that provides the basis of all his writing. Van Huyssteen challenges this application when he says "*the critical realist also wants to avoid both the insular comfort of theological foundationalism…as attempts to say how religious language can claim to be about God at all. Critical realism in theology thus makes a proposal about the provisionality, but also about the reliability, of theological knowledge.*" (van Huyssteen, 43). Or as Pannenberg noted, "divine revelation cannot be pre-annexed by any particular religion, and set up against others as the only true

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[45] J Wentzel van Huyssteen. *Essays in Postfoundationalist Theology.* Wm B. Eerdmans Publishing. 1997. p 43.

revelation."[46] There is no provisionality in Polkinghorne's core theology, and his writing very clearly states his own position that orthodox Christianity is the only true revelation.

Polkinghorne hides his ontological foundations throughout his writing and indeed gives most of his pages over to a sincere effort to show how similar, in fact, theological enquiry is to scientific enquiry. In *Reason and Reality,* he writes, "My own earlier attempt to compare science and theology led me to the conclusion that they 'have this in common, that each can be, and should be, defended as being investigations of what is, the search for increasing verisimilitude in our understanding of reality'.[47]

Statements like *our understanding of reality* or even *verisimilitude* (the appearance of being real) are both epistemological quests. As such, statements like these perhaps also disqualify Polkinghorne's methodology from a critical realist position. Really, what Polkinghorne is attempting to do is to draw as many parallels as possible between the methodologies of science and theology (referring to both as a search for truth, employing interpretive hermeneutics, and being based in *motivated* belief, etc)[48]. This is closely aligned to a similar line of reasoning throughout Michael Polanyi's work and, indeed, Polkinghorne's describes himself as being strongly influenced by Polanyi. Where Polkinghorne departs from Polanyi is in the former's rigid adherence to a particular theological position and refusing to allow it to be challenged. …"I am unwilling to relinquish the grand scheme of Trinitarian theology, anchored in the narratives of the canonical tradition." (Polkinghorne, 2004, 10)

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[46] Pannenberg, *Wissenschaftstheorie*, 322, as quoted in van Huyssteen, p 66
[47] Polkinghorne, *Reason and Reality.* SPCK, London, 1994. p4.
[48] Polkinghorne, 1991, 1994, 2000, 2004

Wentzel vanHuysteen explores the appropriate engagement of Critical Realism with Christian theology (emphasis added):

> *"...Critical realism in theology will have to take seriously the epistemological role of Christianity's classic text and the way this has been inextricably interwoven with ongoing religious experience and communal discernments that have shaped the intellectual history of theological thought through the long history of the Christian faith****. But also, the way in which the epistemological problem of shaping of rationality challenges theology to transcommunal explanations and warrants has to be taken as seriously if theology wants to move beyond fideism****. A postfoundationalist theological program can, by means of a fallibilist[49], experiential epistemology, properly aim for justified beliefs and for a tentative and provisional knowledge of what Christians have come to call God. What is retrieved here is not only a more nuanced way of dealing with the cognitive claims of religious and theological reflection, but also the important insight that rationality can never be reduced to scientific rationality, and scientific rationality can never be reduced to natural scientific rationality. As a broader, holist approach a fallibilist, experiential program of postfoundationalist critical realism can, however again link theology, philosophy of religion, and the sciences in their common search for intelligibility."*[50]

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[49] a term Polkinghorne would never apply to himself

[50] J. Wentzel vanHuyssteen. "Critical Realism and God" in *Essays in Postfoundationalist Theology*. W.B. Eerdmans, Grand Rapids, Michigan. 1997 p 52.

2.6 Polkinghorne and the Authority of Scripture

Polkinghorne, like those who come from the same theological position as he, accepts

scripture as a source which – as the inspired, infallible Word of God – is authoritative as

received and stands on its own[51]. As such, it is perfectly admissible as an academic source

to support a philosophical position or physical reality. His writing consistently follows a

pattern of expansive treatment of intersectional ideas, engagement with a wide swath of

scientific and philosophical concepts and scholars and then in the final pages of his

chapters, landing squarely back on the received revelation of Jesus Christ as described in

Christian Scriptures, and moreover lays claim to the authoritative nature of Scripture to

defend both that and scientific principles. It is as if he fears for the loss of his audience

(which, one has begun to suspect, are Christian fundamentalists who apply a literal

interpretation to all of Scripture, reject the modernist empiricism of science, and operate

squarely within a conflict model in the interaction of science and theology) and must

compel them of the validity of his argument by shoring it up with appeals to Christian

Scripture. This is compelling to no one outside of a particular interpretive framework that

also accepts Scripture as having the same authoritative voice.

During the course of my graduate studies, my life circumstances took me for one semester

to the West coast of Canada in Vancouver. I had one remaining course to take in my

course requirements, and received permission to take a graduate course at one of the

theological colleges there. As it happened, Regent College (a graduate theological

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[51] despite Polkinghorne's persuasive perspective that everything – scientific experimental results or religious experience - needs interpretation, he affords most of Scripture only a narrowly defined interpretation. Of Genesis 1-3, he applies a mythic rather than a literalist interpretation, yet of the Gospels he applies a more literal interpretation, and claims this as the absolute proof that Jesus Christ of Nazareth is the resurrected Son of God, the sole Saviour of the world.

institution) had a course offering in Science and Theology that coincided with the semester that I would be there. I (and my department, initially) assumed that I could take advantage of the reciprocal agreements between graduate schools and not have to pay tuition twice. On investigation, however, we learned that Regent was not part of the Canadian Association of Graduate Schools. Nevertheless, I paid the separate tuition and received permission to take the course. As the term progressed I began to realize some of the reasons why Regent was perhaps not part of CAGS, as I gleaned a great deal of understanding of the methodology and doctrinal limitations of evangelical colleges. All professors are required, as a condition of employment, to sign a theological doctrinal statement of evangelical theology, and to not teach anything which could contradict this, except as an interesting 'case study'[52]. Secondly, in lectures, written work and course materials, scripture was considered to be a perfectly admissible academic source. Within the realm of Biblical exegesis, of course one would cite scriptural references, but in this case, Scripture was used as a proof statement (rather than, say, an illustration from its own context) on physical, philosophical, metaphysical and sociological propositions. Indeed, in most of the course readings, Scripture references appeared as the final 'proof' of a particular thesis. Polkinghorne does this with alarming regularity throughout his books, which indicates that there is a particular audience he wishes to address himself who accept Scripture's claims with the same authority that he does, and an audience that would expect any academic writing to do the same in order to be credible.

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[52] This was the course alluded to in chapter 4, where I relate the instance of a professor describing a video's contents as 'safe' for Christian high school and undergraduate students to watch, in that it would not upset or challenge their beliefs.

A number of evangelical scientists (McGrath, Polkinghorne, Lamoureux, Hastings – the latter two, both Canadian, were at one point young-earth creationists) to sustain the absolutes of evangelical belief, alongside the openness and relativism of what science, philosophy and increasingly, theology – continually evolving – have all proposed about the nature of reality in the 21st century. Certainly their position has value in conversation with those closer to literalist understandings of scripture (such as the ICR and AiG, mentioned in footnote 6). But beyond those circles, Polkinghorne has limited relevance and in the long run could perhaps be more damaging to a deeper engagement of theological understanding beyond one particular theological position.

2.7 Conclusion and Relevance for Christian Education

In this chapter I have examined the ways in which Polkinghorne addresses the science theology discourse, and some of the challenges that emerge from that engagement. Why is this type of engagement so significant? Surely in a cultural milieu (Canadian and American) that fosters adherence to the conflict model, in attempting to further the discourses with Science and Theology it is helpful to have someone so well versed in contemporary physics writing so prolifically and on multiple reading levels promoting a dialogical model? Certainly, Polkinghorne's approach is a helpful and vital component of faith formation to a broad swath of Christian experience whose engagement with science has been suspicious or even hostile. In the final report of the Science for Seminaries project of the Association of Theological Schools, a large number of the student participants identified a general suspicion of science on the part of the leadership and

doctrinal authorities of their own denominational affiliation.[53] Would it not be helpful to frame contemporary approaches to Christian Education through the lens of such a dialogical model?

The principal difficulty in Polkinghorne's writing is that while it fosters dialogue, it only fosters dialogue with a foundationalist and infallibilist approach to Christian theology.[54] One can immediately see that this could be problematic in an ecumenical and pluralist context, if science and philosophies of science are being used to bolster an exclusivist Christian theology. Taking a foundationalist approach is a perspective that indeed has a limited audience. One of the organizations to which Polkinghorne maintains a strong affiliation, (and indeed, he is seen as one of the aces up their sleeve for his scientific credibility) is BioLogos, an evangelical organization in the US whose aim is to persuade fundamentalists of the viability of evolution alongside traditional Christian faith. A similar organization in the UK, *Test of Faith* funded by the Faraday Foundation also claims Polkinghorne as one of its chief spokespeople. For those who agree with his theology (but are a bit stuck on reconciling a foundationalist approach with science) Polkinghorne is a thorough and persuasive apologist.

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[53] http://www.ats.edu/uploads/resources/current-initiatives/science-for-seminaries/ats-engaging-science-in-seminaries-research-final-report.pdf accessed 9 July 2018.

[54] I am applying a definition of foundationalism employed by vanHuyssteen from his *Essays in Postfoundationalist Theology:* "*Foundationalism, as is generally defined today, is the thesis that all our beliefs can be justified by appealing to some item of knowledge that is self-evident or indubitable. Foundationalism in this epistemological sense therefore always implies the holding of a position of inflexibility and infallibility, because in the process of justifying our knowledge-claims, we are able to invoke ultimate foundations on which we construct the evidential support systems of our various convictional beliefs. These "foundations" for our knowledge are accepted as "given" and therefore are treated as a privileged class of aristocratic beliefs that serve as ultimate terminating points in the argumentative chains of justification for our views.*" vanHuyssteen, p 2)

Foundationalism however is unsustainable in our socio-cultural context and indeed, for better or ill in the twenty-first century, is treated with immediate suspicion. As van Huyssteen has aptly pointed out, theology in Western culture must evolve within the postfoundationalist milieu in which it finds itself.

"The postmodern incredulity towards global metanarratives therefore need not lead to the end of the possibility of dialogue, but indeed – through the relentless criticism of intellectual conceit and uncritical dogmatism – can lead to a continuation of all conversation. Seen in this way, modern and postmodern thought are unthinkable apart from each other, and postmodernism is not simply modern thought coming to its end. In fact, when postmodern thought shows itself best in the interrogation of foundationalist assumptions, a fallibilist, experiential epistemology develops that not only can be seen as the hallmark of postmodernism, but also just might open up a new common ground for the current dialogue between theology and science."[55]

In conclusion, Polkinghorne's writing in a particular time and place has been helpful for countless Christians who have been confused by the popular discourses in science and theology, and the conflict models which have appeared to be the only way of approach. Polkinghorne has understood his work as a struggle to escape from the conflict models of the 20th century, yet ultimately he fails to do so, and simply fuels a different kind of conflict, with foundationalism firmly on one side.

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[55] J. Wentzel van Huyssteen. *Essays in Postfoundationalist Theology.* Wm B. Eerdmans Publishing. 1997. p 78

In interdisciplinary discourse, foundationalism will simply not gain any traction. Politically, educationally, theologically and socio-culturally, foundationalism engenders conflict and a stance of absolutes that has alienated more than brought together. Christian Education in this millennium must take into account the broadly informed post-modern milieu in which our younger generation lives. In my experience over twenty-five years of education with youth and young adults, young people tend towards rejecting absolutes. There is also a risk that to foster foundationalist and absolute ways of thinking simply fuels a populist and isolationist approach to public discourse and politics. 'The Bible tells me so' is an insufficient and overly simplistic approach when students have exposure to expansive ways of thinking and being, and the Christian church, through faith formation, must encourage that expansive way of thinking and being. If standing firm in a foundationalist belief is not the way to address faith formation then, what are the tools, models, philosophies, curriculum, and pedagogies that could provide a strong basis for formation in Christian faith, re-imagined through the lenses of post-foundationalism or process theology? In chapter three I will explore the philosophical approach of Michael Polanyi's *Meaning* as providing some insight. By amplifying his ideas in a new context, I hope this will give guidance to a provisional way forward in contemporary Christian Education.

Chapter 3

*"If...personal participation and imagination are essentially
involved in science as well as in the humanities, meanings
created in the sciences stand in no more favored relation to
reality than do meanings created in the arts, in moral judgments
and in religion."[56]*

"Our age is wracked by the fanaticism of unbelievers"[57]

3. Michael Polanyi: Metaphor, Myth, Meaning-Making and Intellectual Freedom

Michael Polanyi is an important voice in advancing the discourses in Science and

Theology, and the application of his work into the contemporary discourse, and its

relevance to Christian Education, could help us move beyond a dialogical model.

Dialogue, as seen in the previous chapter, is a limiting conversation if science is simply

used as a bolster to validate one particular religious framework, or simply applied as an

antidote to the false construct of the conflict model that sets theology and science as

incommensurable.

Polanyi is a well-regarded philosopher and polymath; he was a member of the Royal

Society, a professor of physical chemistry and of social sciences and he brings an

approach that is underappreciated in the contemporary dialogue. Polanyi is definitely an

older voice (his written work spans the 1940's until the 1970's) and thus many of his

ideas are framed around the contemporary discourses and concerns in which he was

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[56] Michael Polanyi. *Meaning*. University of Chicago Press. 1975. p 65.
[57] ibid p 28

embroiled, but these provide a unique perspective,[58] and are highly relevant to the discourse today.

Polanyi's work steps back from the immediate pressing concerns of the notions of science and theology at war with one another and is not seeking to provide a dialogical antidote. Instead, he examines both scientific enterprise and theological searching as endeavours of human thought and understanding. In essence, his thesis is that both of these are ways in which human beings *make meaning* of their lived experience. Thus, science and theology both have a place in human flourishing, but both have been misapplied in endeavours to pit one against the other. Polanyi maintains that, historically, the science-theology controversies are less about the struggle of competing *ideas,* but more about questions of *authority.*[59]

Polanyi is critical of the positivist perspective. His critique of positivism reflects the period of his writing, initially in a post-Vienna circle and pre-Kuhnian time frame (Kuhn's work was published during his active writing years) nevertheless, he brings a balanced approach that points out two important principles:

1. To not overemphasize the 'virtues' of science-as-saviour (based on the false assumption of science as objective, unbiased and value-neutral).

2. To not eject religion as simply magical or superstitious thinking which has no place in a technological post-modern society.

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[58] One of his cherished ideas which is highly relevant to this conversation is the idea of intellectual freedom. In the west, there is a fairly robust conviction that science is a discipline that is open to intellectual freedom; ideas and hypotheses can be opened up and explored at will. Polanyi, who spent the early part of his career in post-war Hungary, notes in *Science, Faith and Society* that intellectual freedom (that is, what is important or significant is self-defined, rather than defined by institutions) has been an elusive virtue in parts of the world at various times, and he cites the lack of freedom in the post-war Soviet Union, where science was to be pursued solely in the service of the state, and the purposes of the state (Science, Faith & Society, p8). Scientists were not necessarily free to pursue "science for science's sake", and certainly not when it contradicted the agenda or philosophy of the state.
[59] Michael Polanyi, *Science, Faith and Society,* University of Chicago Press, 1946. p 26-27.

In Polanyi's last book, *Meaning*[60] he introduces his ideas through an opening chapter, provocatively titled "The Eclipse of Thought". This is not simply a brief history of philosophy, but rather, how public ways of thinking, and belief about the world permeated Western societies over time, and endured cycles of renewed philosophical and political hope, only to be followed by extremes which profoundly tested shifting political and social landscapes. In particular he critiques the nihilist, scientistic and positivist movements of the post-enlightenment, through to the twentieth century.[61] It is this absolute reverence for logic, verifiability (the knowable is provable) that has precipitated the expulsion of religious thought from any public discourse. Polanyi proposes that the rejection of dogmatism was accompanied, unfortunately and incorrectly, by rejection of the metaphysical.

Religion, as the expression of our approach to the metaphysical and non-physical aspects of human life, is an essential part of who we are, and permeates our existence as humans beyond any specific creed. But in order for metaphysical (and religious) thought to retain traction and relevance and not simply become rigid, Polanyi approaches religion as a system of meaning-making, in an environment of intellectual freedom,[62] that uses *metaphor* and *myth* in accessing the numinous. In this chapter, I will explore how Polanyi

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[60] Published in 1975 shortly before Polanyi's death in 1976. It is in essence a culminating work, and captures the spirit of much of Polanyi's writing. It is a synthesis, and includes integration of many of his earlier, primary works such as *Personal Knowledge*, *Science Faith and Society* and *The Tacit Dimension*. *Meaning* is a self-described distillation of all of Polanyi's thought and includes some deepening or refining of some of the ideas he explored in his earlier works.

[61] "*Scientific Rationalism has indeed been the main guide to intellectual, moral, and social progress since the idea of progress first gained popular acceptance about a hundred and fifty years ago*" (*Meaning*, p 25)

[62] In fact, Polanyi insists, meaning-making can only properly happen when it is within a climate of intellectual freedom (*Meaning* p 3)

engages these ideas (meaning-making, metaphor, myth and freedom) and introduce their relevance for contemporary Christian Education.

3.1 Meaning-Making

Polanyi's critique of 'science as rational objectivity' is based in the importance of what he calls *personal knowledge*, or, the lenses through which an individual constructs a view of reality.[63] Any individual, in any scientific engagement, brings to bear their own personal experience, assumptions, expertise and capacities to interpret the data before them. Personal knowledge is informed by both this and the common understandings of the milieu in which the knower exists:[64]

"The premises of science on which all scientific teaching and research rest are the beliefs held by scientists on the general nature of things.

The influence of these premises on the pursuit of discovery is great and indispensible.

They indicate to scientists the kind of questions which seem reasonable and interesting to explore, the kind of conceptions and relations that should be upheld as possible, even when some evidence seems to contradict them, or that, or the contrary, should be rejected as unlikely even though there was evidence which would favour them."[65]

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[63] It is important to note here that personal knowledge is not the same thing as subjectivity. Polanyi describes personal knowledge as being based in commitments which have an interdependent basis, rather than subjectivity which is based in feelings. "This distinction establishes the conception of the *personal* which is neither subjective nor objective. In so far as the personal submits to requirements acknowledged by itself as independent of itself, it is not subjective; but in so far as it is an action guided by individual passions, it is not objective either. It transcends the disjunction between subjective and objective. (Polanyi, *Personal Knowledge*, 300)

[64] An example of this comes to mind from Johannes Kepler, in the development of the laws of planetary motion. For years, Kepler's observations and measurements all pointed to elliptical orbits but for equal years, his interpretations frustrated him because he had been working with the tacit assumption of circular orbits, based on the current common knowledge of his day. Such was his delight and intense frustration at this realization and he referred to his flawed inherited assumptions as a 'noxious thief of time'. (Johannes Kepler. The New Astronomy, 1609).

[65] Michael Polanyi. *Science Faith and Society*. University of Chicago Press. 1946. p 11.

and

"The scientist in pursuit of research has incessantly to make decisions whether to take a new instrument reading or some other new sense impression as signifying a new fact, or to regard it merely as a new indication of an old fact—or else to reject it as having no significance at all. These decisions are guided by the premises of science and more particularly by the current surmises of the time, but ultimately there always enters an element of personal judgment."[66]

To construct meaning (that is, to ascribe validity, profundity or intrinsic human value) is to apply our powers of interpretation to the sensory information we receive, based in personal knowledge. Constructing religious meaning emanates from the sensory information that provokes a sense of awe, lament, passion, illumination, inspiration or inner transformation, also based in personal knowledge. It is uncertain if these aspects of human existence are reducible to mere functions of biological survival.[67]

The same principles of meaning-making can be applied to the interpretation of sacred texts, numinous experience and religious traditions, using the tool of our own reason to do so. But to simply inherit the tacit knowledge of theological tradition without question and without contextual and personal interpretation simply makes God into the internalized reinforcement of our own subjectivity.

I will use a simple and well-known example to illustrate blindly inherited meaning-making. An apocryphal story runs thus: A woman, preparing a leg of lamb, cut off the end of it before she roasted it. A friend watching her asked, "why do you do that?" as she

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[66] ibid p 90. An example of this would be the discovery of Neptune and Uranus. "The planet Uranus before its actual discovery by Sir William Herschel in 1781 had been recorded as a fixed star at least seventeen times. Thus the routine process of reaffirming the known laws of nature becomes the mass grave of many a potential discovery". (Polanyi, SFS, 91).
[67] Michael Polanyi. *Meaning*. University of Chicago Press. 1975. p 63).

herself did not. "I honestly don't know," said the woman "I always thought you were supposed to - my mother always did this". When she enquired of her mother, the mother's response was the same "I don't know – *my* mother always did this". Finally, the grandmother was consulted and she said, "Oh – my roasting pan is too small for a full leg of lamb. I have to cut the end of the leg of lamb off so that it will fit in my pan". A similar 'activity imbued with meaning' is not so apocryphal – it happened in an Anglican church in southern Ontario. A new priest was appointed to a congregation. A little while after this appointment, some parishioners met with the bishop concerned that the new priest was not following the traditions and rituals to which they had become accustomed. The bishop asked why. "Oh", replied the parishioners "he doesn't bless the church". During the sharing of communion, the priest was observed to reverently touch the wall of the sanctuary before he distributed the bread. The congregation, in ignorance, had imbued this with profound meaning and it was said that the priest 'blessed the church' as well as the people when he distributed communion, and the congregation was evidently very fond of both the practice and the symbolic meaning that they gave it, to the point that they were offended and upset that the new priest was not doing this. Suspicious that this might be a liturgical 'leg of lamb' story, the bishop enquired of the former priest to determine the root of this unusual practice, which the congregation had found so meaningful. The former priest laughed at the deep significance that people had ascribed to his actions and provided the very simple explanation: "The sanctuary of the church has a thick pile carpet. While I distribute communion, after I get to the end of the altar rail I have to walk from one side to the other and as I do, I pick up static electricity. I found that I 'shocked' the first person at the altar rail if I touched them. So, I electrically ground myself by first placing my hand

on the metal radiator cover on the wall so that I don't give anyone a small electric shock if I touch their hand."

This simple story illustrates a broader principle. Meaning-making is a human reaction in situations that strike us as significant (art, transcendent experience, scientific observation, etc.). Contextually, we create a narrative to give lasting resonance to our assigned meanings. Meaning is impacted by knowledge. Our lack of knowledge (or our own biases and assumptions about the knowledge that we do have) brings us to meanings that may be disconnected from reality. Kepler's struggle mentioned in the footnote above is very much like an astronomical 'leg of lamb' – his inherited tacit knowledge was of circular orbits and thus confounded his calculations and observations for years. Polkinghorne's tacit knowledge is based in an assumption of the veracity of orthodox Christian theology, and he thus sees the relationality in the structure of the physical universe as a corollary to affirm his Trinitarian theology.

In the previous chapter I addressed the problem of dogmatism in the science/theology conversation. Dogmatism I define here as a strict adherence to a particular worldview, way of understanding, or claiming a particular unchangeable ontological reality. Dialogue is not possible if dogmatism is one of the conversation partners, as it presupposes a particular unchangeable point of view as a universally accepted reality. So, dialogue becomes apologetics. Dogmatism – whether religious or scientific - can be the result of misdirected meaning-making; meaning is ascribed in either ignorance or simply blindly inherited. Dogmatism results when we allow meaning to be made for us, and accept it as ontological reality. Religious Education in a post-modern context can no longer afford to come to the table as an absolute or incontrovertible position. In our experience with many

hundred teenagers and young adults over the sixteen years of *Ask & Imagine*,

unscrutinized absolutes were often treated with immediate suspicion by the young

students.

Polanyi advocates that – in scientific, political and religious thought – meaning-making

must accompany, and in fact is only possible in, intellectual freedom. I would say, by

extension, that Religious Education must also be accompanied by intellectual freedom.

The core of pedagogy must be engaging students in the process of meaning-making in an

informed, thoughtful space, with mutual accountability. Not in a sense of 'anything goes'

or 'create your own reality' but, rather, the meaning-making that lives within the context

of community and accountability.

3.2 Metaphor and Myth

Meaning goes hand in hand with metaphor as a tool of expressing the inexpressible by

seeing the connections - of either the numinous or the inaccessible physical realities - to

human experience. Metaphor, according to Polanyi, is the way that human beings make

sense of the world through the means of creativity: art, poetry, imagination and ritual. The

trajectory from simple sensory experience (perception) to what that might connect to

(metaphor) is really the only way we create and perpetuate meaning in an open and

expansive way. "Metaphor", he quotes Aristotle, "consists in giving the thing a name that

belongs to something else…a good metaphor implies an intuitive grasp of the similarity in

dissimilars."[68] He particularly highlights 'metaphor' as a unique feature of human ways of

knowing and exploring. The power of metaphor is through the capacity to *interpret* what

is presented and *construct personal meaning*. As an example, Polanyi shares a poem rich

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[68] Polanyi, p 75

with metaphoric language, and then expresses the same ideas in direct prose. This juxtaposition is intended to show the power of metaphor (in this case, poetic language) to elicit response and stir us at a deeper, more passionate, more engaged level and thus inspire and potentially generate a new way of thinking. Prose, he maintains, does not hold the same power as it simply conveys information without drawing out our capacities of creative connectivity. Metaphor taps into parts of our selves and help us go to places of constructing deeper meaning that direct words cannot do. Metaphors, like jokes, lose their power if we have to explain them. The integration of the dissimilars within our own conscious, and the act of making those connections is what makes them powerful. As described above in exploring meaning-making, it is not just an individual effort (it is not as though, through metaphor, we are constructing our own individual realities) but, rather, we make meaning in ways that are connective and relational – our meaning-making intersects with others, and we draw similar and sometimes universal inspirations and aspirations from this process;

"…*it is possible for our imagination to integrate these incompatible elements into a meaning – a meaning that cannot be expressed in any set of coherent, explicit statements, a meaning that is born and remains at the level of feeling but which is nonetheless **a genuinely universal personal meaning and not merely a subjectively personal meaning**.*"[69]

The meaning we extract from metaphor – represented through the *frameworks* of art, poetry, ritual, creativity, imagination etc. – is as 'real' as the tangible or physical. The chair that I sit on is not a symbol of a chair – it IS a chair. The object is the thing itself and

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[69] ibid. p159. (emphasis added)

I know it to be real by the sitting on it. The metaphor in the song on the radio that moves my imagination and captures my experience of loss or longing is equally real in that it causes a response (elicits a reaction, makes a connection, conjures a memory, leads to an outward action). It is 'real' in my human experience (and presumably not just mine, but others who are hearing it on their radios as well).

Polayni speaks of metaphor as existing outside of time in what it seeks to convey, and that *"...they are timeless moments, whether what they celebrate is personal or historic."* (p 118). Metaphors have a power in our lives far beyond their immediate literal meaning and *"...a metaphor, like a symbol, carries us away, embodies us in itself, and moves us deeply as we surrender ourselves to it."*[70]

From metaphor he moves to myth, (understood as 'truth-bearing', that is, a narrative, ritual or celebration that bears upon a broader shared experience or expression, rather than understood as something 'false') as a transcendent way of understanding, and extends that to what 'religious thought' is.

> *"...thoughts detached from our normal experience can deeply affect us in works of art, and in the celebration of solemn occasions. But for religious thought we have to enlarge these terms. The integration of incompatibles accomplished for us by the creative powers of the imagination are as evident in religious thought as they were in the arts."*[71]

To explore more deeply the idea of *myth*, Polanyi looks to Mircea Eliade's *Myth and Reality*. In the 20th century:

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[70] ibid p 79.
[71] ibid p 125.

"...Western scholars have approached the study of myth from a viewpoint markedly different from, let us say, that of the nineteenth century. Unlike their predecessors, who treated myth in the usual meaning of the word, that is, as "fable", "invention", "fiction", they have accepted it as it was understood in the archaic societies where, on the contrary, "myth" means a "true story" and, beyond that, a story that is a most precious possession because it is sacred, exemplary, significant." [72]

The content of myth is principally about origins:

"Myth narrates a sacred history; it relates an event that took place in primordial Time, the fabled time of the "beginnings". In other words, myth tells how, through the deeds of Supernatural Beings, a reality came into existence, be it the whole of reality, the Cosmos, or only a fragment of reality—an island, a species of plant, a particular kind of human behavior, an institution. Myth, then, is always an account of a "creation"; it relates how something was produced, began to be." [73]

Through myth we encounter truth, not in the sense of factual truth, or provable, knowable truth, but rather, truth that transcends and yet is immanent within human experience. Ritualized within story, liturgy, and the incompatibilities (metaphors) of transcendent religious experience, the existence and 'knowability' of God then is lifted beyond simply propositional constructions (which default too easily into the realm of positivist methodology), to a "meaning-full representation of the way things could indeed be." Religion, according to Polanyi, could then be acceptable on these grounds. He proposes

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[72] Mircea Eliade. *Myth and Reality: World Perspectives*. Translated from French by Willard R. Trask. Harper & Row, New York, 1963. p1
[73] ibid p5-6.

that naturalistic and scientistic commitments of the twentieth-century (and twenty-first, presumably) could be removed as a bar to acceptance of such a possibility, as they have been misconstrued in such a way as to stand in its (religion's) way.[74]

Values, order and mutual authority (as opposed to autocracy) are the way towards a free society. Religious orientations, Polanyi says, portray the world as *meaningful* as opposed to capricious, random and meaningless. The universe is not value-free. Polanyi makes an insightful exploration into the notions of randomness, determinism and teleology which are some of the traditional 'sticking points' in the dialogue of science and religion, and offers us a helpful way through which respects both traditions. A free society is not simply an open one where 'anything goes', but rather, Polanyi states, "it is a society in which men [sic] being engaged in various activities whose ends are considered worthy of respect, are allowed the freedom to pursue these ends." (p 198) Or again, "*A free society is regarded as one that does not engage, on principle, in attempting to control what people find meaningful, and a totalitarian society is regarded as one that does, on principle, attempt such control.*" (p 182). These ideas I find helpful in also assessing the quality and nature of religious practice, where practitioners are free to find and make meaning within tradition and story, rather than having the meaning (or interpretation) rigidly controlled. This is why Polkinghorne's work is problematic in creating an open relationship with science and theology. He takes a set of data (scripture, scientific knowledge, understanding of the world) and imposes a particular religious interpretation/meaning on it, and advocates for that as the sole correct interpretation or meaning at which one can

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[74] Polanyi, *Meaning,* p 160.

arrive. Meaning-making becomes an irrelevant process if the meaning one is supposed to make is a non-negotiable. That is still dogmatics, though wearing the disguise of dialogue.

3.3 Intellectual Freedom and Polanyi's thought applied to Religious Education

Polanyi's thought represents a constructive challenge to the theological frameworks that underpin contemporary approaches to Christian Education and Faith Formation. Though Christian Education is the subject of extensive writing and critical practice, in the context of curricular or congregationally-based education programs, it often displays some of these features:

1. Education as adoption of propositional statements. Faith education is about assuring *right belief* and acceptance of particular doctrines (through creeds, catechism, etc).

2. Education as acquisition of a particular interpretive lens. Faith education bases itself within sacred texts and story/narrative, yet often overlays a particular interpretive lens on the meaning of the story/narrative, rather than encouraging the learner to develop critical tools for contextual interpretation. This was discussed in chapter 2, wherein I explored the question of Scripture as an absolute authority – as describing the way things actually are, vs. a more desirable approach in Scripture as a particular contextual interpretation. To many authors, the science-theology discourse too often reverts to "scripture as final authority" that seeks scientific validation for that proposition.

3. Education as apologetic. Convincing the learner of the validity or 'rightness' of a theology position or religious worldview.

4. Education as ritual indoctrination. A set of practices, behaviours, rituals or customs peculiar to a specific community, presented as an expression of doctrinal adherence rather than tools of meaning-making.

Education and Faith Formation is seldom about *meaning-making* and this is, I believe, where Polanyi's thought can be brought to bear, particularly in the area of the discourse in science and theology.

Christian Education, like scientific exploration, can only be done within a climate of intellectual freedom. Adherence to particular ways of believing, enforced through things like doctrinal statements such as those mentioned in chapter 1 and 2, is the antithesis of intellectual freedom. Intellectual freedom is certainly not an 'anything goes' approach but, rather, it allows for the possibility of an interpretive lens which might not look like an accepted norm. An example of that interpretive lens is the approach that Alfred North Whitehead took in his exploration of Christian theology. The development of *process theology* can be seen as that which emerged out of a climate of intellectual freedom to interpret the sacred story, informed by a particular context/culture/experience of the early 20th century. Whitehead noted, *"there is urgency in coming to see the world as a web of interrelated processes of which we are integral parts, so that all of our choices and actions have consequences for the world around us."*[75]

Indeed, process theology found *resonance* within the Christian community, and inspired many theologians and teachers in the decades that followed, both Jewish and Christian.

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[75] C Robert Mesle. *Process-Relational Philosophy: An Introduction to Alfred North Whitehead.* Templeton Foundation Press. 2009. p 9.

Often, new modes of thinking are described as "Copernican moments" – extraordinarily insightful realizations of the true nature of reality, or a discovery of some hitherto completely unknown phenomenon. Polanyi corrects this to say that Copernican moments are actually moments when an individual can arrive at a new way of interpreting an existing set of data that is already equally available to all. It was not that Copernicus discovered something that no one else had access to. It was that, looking at the same set of data, he applied a different interpretive lens to it. *That* is the gift of intellectual freedom, and it must surely apply to religious thought (interpretation of story, and tradition, within one's experience, through the application of insight, personal knowledge and reason) as well as scientific thought. In the following two chapters, I will examine models of current discourse in Christian Education in science and theology, how they are limiting, and propose an approach to Christian Education within a milieu of meaning-making, metaphor/myth, and freedom.

Chapter 4

4. Current Approaches to Science/Theology in Christian Education and Faith Formation with Youth

The opening principles in any discourse sets the stage for how that discussion, or educative project based on that discussion, may unfold from there. In the case of the current literature on the science-theology discourse within Christianity, the opening principles are largely rooted in a conflict model. This is, paradoxically, the starting point from which the discourse is attempting to escape. For others, overcoming the conflict and inviting a dialogical approach is expressed as the chief aim of these efforts, but, as I have explored in the first two chapters, the subtext of these efforts is the continued validation of a specific Christian theology within an expanding Western worldview that largely rejects doctrinal absolutes. This includes as a subtext an ontological interpretation of scripture, that is, scripture is a historically accurate reflection of reality and is a benchmark against which scientific theory must be measured[76].

In this conflict-based discourse, science or scientific method is often used as a methodology to support Christianity's traditional truth claims. In our contemporary society, we put a lot of basic trust in the methods of scientific enquiry. This cultural

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[76] Even in early Christian history, Augustine cautioned against speaking on science (reason, philosophy) from the perspective of Christian scriptures, as this merely makes Christian faith laughable. *"It frequently happens that there is some question about the earth the other elements of this world; the movement, revolutions, or even the size and distance of the stars, the regular eclipses of the sun and the moon, the course of the years and seasons; the nature of the animals, vegetables and minerals, and other things of the same kind, respecting which one who is not a Christian has knowledge derived from the most certain reasoning or observation. And it is highly deplorable and mischievous and a thing especially to be guarded against that he should hear a Christian speaking of such matters in accordance with Christian writings and uttering such nonsense that, knowing him to be as wide of the mark as…east is from west, the unbeliever can scarcely restrain himself from laughing."* Augustine*, De genesi ad litteram, 1.19, trans. Meyrich H. Carre, in Realists and Nominalists* London: Oxford University Press, 1946. p19; quoted in David Lindberg and Ronald L. Numbers. "Beyond War and Peace: A Reappraisal of the Encounter between Christianity and Science." *Church History* 55, no. 3 (1986). p338.

acceptance of scientific enquiry is leveraged by those advocating specific theological positions as a tool to validate a single religious belief system. This kind of discourse is not one of Science and theology at all; the most common discourse, particularly in educational materials, is Science vs. Western Evangelical Protestantism.

A short survey of the introductions to many books, academic journal articles and resources—including educational resources—which invite the engagement of science and religion reveals this bias towards a hermeneutic of conflict. Words or phrases like 'warfare', 'fight', 'conflict', 'enemies', 'hostility', 'suspicion' 'threatening belief in God' 'testing faith' appear in introductory pieces, with the intent to 'overcome' this sense of conflict as the inherent aim of the work, and advocating (with some overtones of amazement) that 'science and theology CAN be friends' or similar phrases. In this chapter, I will explore some current curricular models that have been developed in recent years. Most are targeted towards a faith community (Western Protestantism) that perceives that – at some unstated level – it is somehow under threat from scientific discovery and enquiry[77] but is not prepared to let go of traditional hermeneutical stances. The degree to which any given community adheres to (and advocates for) traditional belief varies, but all who operate from a starting point of conflict-to-overcome have at their core a battery of scientists with advanced academic credentials across all fields of science aiming to demonstrate that 'science' and evangelical Christian belief are not incompatible. Most of these approaches accept this particular belief system as a starting (and ending) point, and thus the 'dialogue' becomes more about how the dialogue partner can be used to further or strengthen the foundational beliefs. While this may be a laudable effort within the context

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[77] Or it bases this perception on the perspectives of popular culture, as discussed in Chapter 1.

of a specific community with a particular belief system, this kind of approach does nothing towards broadening and deepening the conversation between the tangible and noumenal aspects of human experience.

Obviously within this approach I am demonstrating my own bias away from science-religion curricula that aim to affirm the validity of dogmatic Christianity. My conclusion, which I will introduce in chapter 5, is a new approach to Christian Education and Faith Formation that is coherent within a Christian context that does not claim the same interpretive stance towards scripture, neither does it feel as though it is under 'threat' from phenomena such as multiculturalism, religious pluralism or scientific discovery. I will propose that the operating philosophy of Christian Education could consider the ways in which our classical approaches to faith education might be revised into our current context, and how the expanding post-foundationalist worldview of our current era might challenge our hermeneutical starting points, and inform how we could approach formation and education differently within faith communities, well-informed by scientific thought, anthropology and philosophy within our post-modern milieu.

4.1 Models of Education in Science and Religion

A number of religious-based initiatives, (in most cases principally funded by the Templeton Foundation), have attempted to meet the challenge of moving interactive discourse in science and theology out of academia and into public conversation or education. Most have produced resources aimed at providing Christian congregations/youth programs/education programs/parochial schools ways to engage conversations on science and faith.

4.2 Test of Faith

A decade ago in the UK, the Faraday Institute, based in Cambridge, initiated a project to create video, text and discussion resources entitled "Test of Faith: Science and Christianity Unpacked" (www.testoffaith.com, 2008). The aim of this project was to provide resources for Christian congregations to explore specific questions within science alongside Christian theology – particularly cosmology, evolution and teleology (i.e., the purposefulness of Creation). The first principles of this program reflect a paradigm of 'overcoming the conflict model', as stated in much of their introductory material, as well as implied in the choice of title. An additional subtext is challenging scientific reductionism, notwithstanding the fact that secular philosophy of science has been challenging reductionism for several decades, and it is no longer an operating paradigm within much of the scientific community.

Test of Faith employs a typical strategy in engaging a number of credentialed scientists, many of whom are also ordained ministers, to present a series of perspectives on questions of science alongside Christian religious belief, and inevitably drawing the conclusion that nothing in science contradicts Christian belief. Rather, scientific exploration points them towards a deeper affirmation of the wonder of God's creation, the providence of God revealed in the complexity of nature, and the fulfillment of their scientific pursuit as a holy calling in exploring God's creation. The videos and resources have an echo of William Paley's natural theology.[78]

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[78] William Paley. *Natural Theology or Evidences of the Existence and Attributes of the Deity.* 1802. In this work, Paley made the often cited watchmaker analogy, that the complexity of the natural world is evidence for the existence of God.

Many of the videos have an overly strong focus on 'the things science doesn't really know' and thus treading perilously close to the notion of the *God of the Gaps*[79], which ironically, Polkinghorne and other writers frequently caution against.

The companion resource for youth, however, is targeted specifically at engaging science from a Christian perspective as a Christian apologetic rather than the broader interdisciplinary understanding of theology, science and philosophy. As an educational resource, it fails to acknowledge the questions that youth bring to the conversation, rooted as they are in an educational system that operates squarely within a post-foundationalist, pluralist context. Test of Faith is written for and by a specific community that aims to preserve and validate its own way of thinking and believing. One independent reviewer noted that, while the documentary presents itself as 'open-minded', "… *it trades in codewords that reveal its preconceived notions. 'God did create us and did so for a purpose,' is the message as best I could understand it, 'now let's see where we can ferret out some kind of scientific evidence to support this idea'.*"[80]

Since the initial project and the launch of the video and youth education resources ten years ago, more recently Test of Faith has made available a series of academic papers exploring emerging questions of science and theology (bioethics, environmentalism, neuroscience, emergence) which reflect perhaps a broadening scope and a slightly more

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[79] The God of the Gaps theory, in brief, states that wherever one encounters a 'gap' in knowledge or understanding of a particular fact or why a phenomenon occurs, this allows a space for 'God did it' or 'this is how God created it' and using the notion of divine inspiration or creation to fill in the gaps of knowledge. Polkinghorne and others go to great lengths to caution readers against employing the God of the Gaps explanation to scientific phenomenon, yet the Test of Faith video and discussion resources consistently lean heavily towards it. "There are truths about the universe that science can't explain" with heavy implication that those truths might be found in knowledge of God. (Test of Faith video 3)

[80] Brian Switek http://scienceblogs.com/laelaps/2009/10/01/of-false-alternatives-and-stra/ accessed 12 Sep 2018.

deliberate move away from a strictly evangelical worldview. This is perhaps reflective of a consciousness about the expanding pluralistic and multi-cultural milieu in which it finds itself in the UK in 2018. The overall tone of these papers and chapter excerpts however follows a remarkably predictable pattern: First, here is a simplified but lengthy description of highly complex physical processes in the author's field of expertise (eg, quantum physics, neuroscience, molecular biology). Second, there is much we don't understand about (process *x*). Third, it would be short sighted to invoke the God of the Gaps theory in this instance to prove God exists. Notwithstanding our non-use of the God of the Gaps idea, it is implied based in the premise that we all have beliefs and make value judgments and draw the empirical conclusion that life has Big Questions and belief in God is therefore justified.

This seems overly simplistic, yet it remains the subtext of many such papers: Andrew Miller, a molecular biologist and a contributing writer to *Real Science, Real Faith* concludes his paper on molecular biology and belief in God thus:

> *"It is certainly not a scientific matter to decide whether or not there is a God, whether or not there is a fundamental explanation of everything in the personal will and purpose of a Creator. It is a decision of a type which is usually called metaphysical. But this does not diminish the importance of the decision. We all, atheists, agnostics and theists alike, make metaphysical decisions, consciously or unconsciously, which involve what we regard as reasonable presuppositions or value judgments; they are unavoidable and we live by our metaphysical decisions. Most of us believe that torture is wrong, that there is truth to be discovered about the natural world, that there is an external world independent of our subjective awareness, that*

other people have subjective awareness just like our own, and so on. However, justification of these beliefs is not easy. Powerful arguments have been deployed by philosophers purporting to show that justification of these beliefs is not possible. However, these beliefs are not at all arbitrary, but are based not only on empirical evidence, but also considerations of coherence, fruitfulness, comprehensiveness, adequacy and intelligibility as well. On the basis of these criteria and in the light of contemporary biology, belief in God is reasonable."[81]

In the end, the exploration of science and theology in Test of Faith leaves theology still locked in a tussle with empiricism – the subtext of this entire resource is 'we can't prove it, but there are many things we can't prove but still believe, ergo, God, as revealed in Jesus of Nazareth'. It is sufficient perhaps, but only if one is already convinced of the rightness of this specific belief system.

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[81] Andrew Miller. *Biology and Belief*, in Real Science, Real Faith. R.J. Berry, ed. Monarch Books, 1995. p33-41.

4.3 Science for Youth Ministry

In September 2015, Luther Seminary in Minneapolis initiated a three-year project[82] called *Science for Youth Ministry: The Plausibility of Transcendence,* which is a promising title, suggesting the potential for a more broad reaching conversation. The project's aim was to catalyze faith-and-science conversations with young people through Protestant youth ministry and produce materials to encourage those discussions. Dr. Andrew Root, a well-known writer and researcher in youth ministry and youth faith formation, was the lead on the project.

In a series of focus groups that preceded the research project, "Science for Youth Ministry", researchers interviewed youth ministry leaders and educators from a variety of Christian traditions in the USA to determine the attitudes and capacities of youth leaders and teachers in faith communities to engage questions of science and theology within their own contexts. The results of this survey divided respondents into three different categories: Conservative, Moderate or Progressive based on their foundational approach to questions of science.

The Conservative youth leaders were largely hostile towards any discourse, not just scientific, which seemed to contradict the existence of God as known through Christian belief, and the inerrancy of the Bible:

> *"First, (for these youth leaders) belief in God is a given. This is not a tenet of faith to*
>
> *be doubted. And second, the Bible is the foundation for every aspect of faith and*
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> *ministry. In a discussion with science—or any other non-theological mode of*

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[82] Funded by a $1.2 million grant from the Templeton Foundation.

discourse—the Bible gets the first and last words. What that means practically is that a

dialogue with science will only be entertained as long as science corroborates theism

and the biblical witness. But when it doesn't, then science is jettisoned in favor of God

and the Bible. As one youth worker told us, "When [science's] content supports

something that scripture's said forever, then it's a bonus."

In this way, science is sometimes used as a tool of apologetics. But more often, the

stance is one of hostility. These youth workers are suspicious of or even outright

antagonistic toward American culture writ large, and science is very much a part of

that."[83]

Youth ministers in this study who came from what is termed more 'moderate' expressions

of church feared their own lack of capacity to engage with broader questions of science

(and the specter of 'pro or anti - evolution' that seems to be the principle issue to raise its

head in these conversations) for fear of loss of employment, parental opposition or their

own unfamiliarity with how to engage these questions.

> *"The moderate youth ministers did not have the sense of resignation of the liberal*
>
> *group nor the overt antagonism of the conservatives. Instead, they exhibited a*
>
> *general sense of unease. They embrace evolution, but they worry that their students'*
>
> *parents are creationists. They want to talk about LGBT issues and the biology of*
>
> *sexuality, but they don't want to get in trouble with the senior pastor. And lacking*
>
> *thoughtful resources that engage science and faith, they simply avoid the topic."*

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[83] Youth and Science White Paper. Luther Seminary, 2015.

One might expect that youth ministers who come from liberal churches would attempt some form of synthesis or understanding with science and theology, and yet the results of the SYM surveys indicate that an attitude of resignation is the most prevalent attitude:

> *"Among the liberal youth ministers, there was a sense of resignation. The scientific framework is dominant, and affirmations of faith have taken a back seat. One said, "I wish there were some type of conflict, but science has just won the day. There are no questions coming in my group." Science and religion are not adversaries in these churches. Instead, the Bible and ideas of the supernatural are spoken of in tones of apology…'I don't think they've been given the tools to think critically and engage critically what they're being taught, so I think they might be able to compartmentalize what their taught in church and what they're taught in school'…The liberal youth ministers reported that this is their biggest challenge: getting their students to move beyond compartmentalization to see that issues of science and faith overlap and can be considered in an integrated fashion. As a group, they seemed stumped as to how to facilitate this integration."*

The overall conclusion of the surveys of both youth and their educators showed "…that teenagers are acutely aware of the ways that science implicates their faith, but youth ministers either do not fully understand this issue or feel inadequate to address it."

The Science for Youth Ministry project produced a series of videos and learning guides, and hosted several conferences for youth ministry leaders and pastors to show them how to integrate science into theological learning. While the intention at the outset was hopeful for a more broad-based approach than other resources previously published, the

publications and video showed evidence that the work was heavily influenced by the American historical context of Protestant Puritanism and a strong bias towards faith formation within American evangelicalism. Again, like *Test of Faith,* the videos and study guide relied heavily on the 'academic scientist turned pastor' as its chief spokesperson. The videos in the SYM series retain a conflict model as their operating hermeneutic, and are principally aimed at refuting that. *"Do you ever feel like faith and science are in competition? That you've got to choose one or the other? But…what if our faith can be expanded and enlarged by science?"* asks the self-described science nerd/pastor who narrates the video. The latter question is a hopeful one, and might imply that faith questions, theology and the basis of belief (e.g., moving away from magical or superstitious thinking) could grow and change as part of the evolution of human knowledge and understanding.

And yet, (and despite the caution of the pre-survey, to not use science to simply bolster traditional faith) this too is a resource that is an apologetic for evangelical Christian belief. It provokes perhaps a shift away from fundamentalism, but does not move much further than that. The general thrust is that science is not an enemy to be feared by Christianity. The principle resource is a series of short videos and narrated by an astrophysicist/pastor who begins each video with an extraordinarily enthusiastic: *"Hello, my name is Paul, and I'm proud to be a science nerd!"* as if to say 'yes, science and theology *can* be friends!' The videos (and student guides) are replete with conflict-based discussion points. The second video, as an example, which attempts to explore the historical relationship between religion and science is includes hyperbolic (and largely incorrect) statements about the origins of the 'conflict' between science and religion throughout history, that are largely

reflective of the ideas presented in A.D. White's "History of the Warfare between Science and Theology".

The video cites four historical figures. Copernicus *("I cannot overstate how radical this theory* (Copernican heliocentrism) *was. People freaked out!"*), and a discussion of Galileo which completely ignores the general acceptance of heliocentrism at his time, instead referring to Galileo himself as 'totally demolishing the earth centered idea'. The video emphatically points out how Copernicus and Galileo (as well as Kepler and Newton) were Christians, as well as scientists. (the implied conclusion is: you can believe in God because significant scientists did too.)

The video concludes with an admonition to not be afraid of science, or its discoveries. *"...It's up to us to embrace science, to celebrate its discoveries, and to welcome its challenges. Together, let's continue to explore how science can illuminate and expand our faith."*[84]

As previously mentioned, during my studies I took a graduate course in Science and Theology at Regent College in British Columbia. The structure of the course (similar to Templeton-funded projects such as those listed above) was to invite a series of scientific experts in various fields who also claimed adherence to evangelical faith. Much like the *Test of Faith* resources described above, the formula for most lectures was:

    1. here is my expertise in this field;

    2. here are either the gaps in our knowledge, or the places where Christian theology overlaps with the research in this field (e.g., psychopathology is evidence of the sinful and fallen nature of humankind);

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[84] Paul Wallace, Narration to "A Cosmic Adventure" video series, part 2. Science for Youth Ministry, Luther Seminary, 2018.

3. here is where this particular scientific field bolsters traditional Christian theology. The professor teaching this course was one of the full time faculty members. A number of the students in this course were current or former youth pastors. When asked our motivations to taking this course, many of these individuals stated that they were trying to figure out how to engage youth with conversations about their faith and science. As described earlier, a suggested video resource was deemed 'safe' for viewing. What I believe the lecturer was implying was, the content of the video won't challenge the classical theology of your faith communities; the concepts in the video have been tamed and do not ask hard questions of the learners, or propose any examination of core beliefs. (For example, given current research into neurobiology, how do we understand the classical concept of 'soul'?)

Clearly, many educators in the field (SYM included) operate in varying degrees of confronting the conflict model. Scientific understanding, or the developments of scientific modes of thought, are perceived as things that have the potential to be destructive of faith.

4.4 An Integrative Approach in Religious Education

While there are certainly evangelical influences within Canada, the realities of our cultural context include a stronger separation of church and state, and support for multiculturalism within a multi-religious society. How then are youth leaders and pastoral leaders meant to approach Faith Formation in a way that includes and embraces scientific knowledge, acknowledges the post-foundationalist leanings of the milieu in which these churches find themselves, not to mention explore faith, not a an exclusive belief system, but alongside the reality of a multifaith culture. To reiterate what one youth leader said in the SYM pre-interviews: *"I don't think (students have) been given the tools to think critically and*

engage critically what they are being taught, so I think they might be able to compartmentalize what they are taught in church and what they are taught in school" Theologians such as Pannenberg, Tillich, Suchocki and VanHuyssteen offer twentieth century expansions on or reframing of classical theology in ways that begin to address a reformation of practical theology within a scientific age, however their ideas have not been brought into dialogue with the very roots of faith formation. If theology is truly to be in honest dialogue with science, it should allow (and in some circles, has allowed) itself to be challenged and changed by that encounter, and religious education in turn be informed by that encounter so that students do not feel that they have to compartmentalize their faith learning and their academic learning. In the next chapter, I will explore how pedagogies of religious education can be informed by this broadened and deepened theological position that allows itself to evolve within its milieu in a Protestant, North American context.

Chapter 5

5. Discourses in Science and Theology: Taking a new approach to Christian Education and Faith Formation

The proposition of this thesis is to explore the possibility of an approach that can engage critical thinking and facilitate this integration (or rather, work against the cultural trend of the *dis*integration) of science and theology. My own experience of teaching science and theology for over a decade with high school and university-age students indicates that resources which already assume the student has bought in to a largely evangelical Christian belief system are not valuable resources. They are immediately held in suspicion, as students see them not as an invitation to dialogue but, rather, as a religious tract. Students bring a strong desire for thoughtful integration, to move beyond compartmentalization, and to challenge the basis and roots of their 'Sunday school' theology and grow it into a mature, intelligent and well grounded faith and practice which embraces all avenues of human thought and exploration. Students are keen to ask questions, to bring their doubts and have both taken seriously by teachers, pastors and youth leaders. The experience of the *Ask & Imagine* youth theology program as well as others in the High School Youth Theological Programs (HSYTP) revealed that youth are also keen to engage in deep theological conversations and not simply be presented with already formulated 'easy' answers.[85] Through this chapter, I will explore a variety of theologians and educators who may provide a helpful corrective, and open up potential avenues for the basis of Christian Education within a congregational setting.

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[85] *How Youth Ministry Can Change Theological Education – If We Let It*. Kenda Creasy Dean and Christy Lang Hearlson, eds. WB Eerdmans, Grand Rapids, MI. 2016.

5.1 Wolfhart Pannenberg – Metaphysics and the Idea of God

Wolfhart Pannenberg, while most certainly beyond the grasp of the average young person in exploring science and theology, is worth mining for a different approach to this conversation. Pannenberg speaks of our *idea of God*, and these conversations are the human quest towards the metaphysical, or, our self-understanding of finite being. While, ultimately, Pannenberg himself lands squarely on Christian belief in resurrection as a historical event and the best expression of the eschatological hope of creation (and thus endears himself in many ways to classical theologians), nevertheless, his quest is broader than that. In *Metaphysics and the Idea of God*, Pannenberg explores beyond a tribal identity for God (what numerous authors in the area of science and theology obliquely or directly refer to as the "Christian God"), or that our anthropological quest to understanding the Absolute resides solely in one belief system. He states:

> *"The result of our enquiry for the philosophical concept of the Absolute and its*
> *relationship to the God of religion is clear: philosophical reflection can lead to the*
> *formulation of criteria for presenting the understanding of God within a religious*
> *tradition. But it cannot actually replace the tradition…when metaphysics begins to*
> *explicate the understanding of God within a particular religious tradition…it actually*
> *becomes theology. However, without actually taking this step, metaphysics can still*
> *discuss the significance of the general criteria drawn from metaphysical reflection on*
> *the Absolute for our understanding of finite being. After all, it is for the sake of this*
> *task –the task of achieving a comprehensive interpretation of the finite world—that*
> *metaphysics attempts to rise above the multiplicity of the finite toward the idea of the*

One, a One that grounds the unity of the world and provides the unifying context for

the multitude of things within the world."[86]

This kind of philosophical approach broadens the exploration of the physical and the

metaphysical - both, perhaps, encapsulated in the concept of our "*interpretation of the*

finite world". It does so without limiting the conversation simply to using the physical to

prove one concept of the metaphysical. Thus it provides a broader basis for the science

theology discourse, which welcomes the perspectives of anthropology, philosophy,

psychology as well as the physical sciences in our understanding of our finite being, and

our relationship to and understanding of the Absolute (synonymous with the infinite, in

Pannenberg's thought). Another concept explored in *Metaphysics and the Idea of God* is

the understanding of the world as comprising (millions of) disparate parts – species,

entities, identities, systems – and it is the *unity* that holds it together as one entity, the

cosmos. We certainly see this idea expressed in ecology and biology – the

interconnectedness of all things in the cosmos is a given. Referring to Hegel, Pannenberg

describes the interconnection thus: "a *unity* of the Absolute with its other, that is, with

what is finite and limited, is required, such that this other is conceived as the expression of

the Absolute". Put more succinctly, in a Jewish fable of a conversation between Abraham

and God, God says "without me, you wouldn't exist", but Abraham retorts, "Yes, but

without *me* there wouldn't be anyone to think about you". Or even more simply, in the

lyrics of a song about everyday miracles, songwriter Linnea Good says, 'the mama makes

the baby, but the baby makes the mom'[87]. The 'mom' *exists* only because of the baby that

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[86] Wolfhart Pannenberg. *Metaphysics and the Idea of God*. trans of *Metaphysik und Gottesgedanke*, 1988, by Philip Clayton. Wm. Eerdmans Press. Grand Rapids, MI. 1990. p 41-42
[87] Linnea Good. Howdja Do That? *Swimmin' Like a Bird*. Borealis Music. 2006.

has been birthed by her. The identity (mom) is created solely by the existence of the baby. So in a sense, we do 'make up' God, but only because God made us.

Seen in this light, science is not a threat to the metaphysical.[88] Theology, as our understanding and expression of that interconnectedness between the finite and the infinite is only more fully fleshed out by the exploration of the known.

5.2 Philip Clayton as an Interpreter of Pannenberg

Philip Clayton, a student of Pannenberg, and himself an extensive writer and researcher of science and theology, highlights three aspects of Pannenberg's efforts in relating science and theology:

First, that Pannenberg sought the integration of theology with other discourses such as social sciences, physical sciences and in particular, anthropology and how humans have interpreted their world (he uses the term *homo hermeneuticus* – the interpreting man).

> *"Pannenberg's work has been driven by a larger vision: the natural, even inevitable, progression from the physical sciences through the social sciences to the sciences of interpretation, and on to the themes of philosophical anthropology and their possible grounding in the imago Dei."* [89]

Second, like Polanyi, Pannenberg sees the connection to the ways in which *Wissenschaft* is about making *meaning* of lived experience, and the importance of that being a renewed task in every generation so as to make religion continuously relevant in human flourishing. Clayton writes:

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[88] which gives birth to theology, as Pannenberg describes above.

[89] Clayton, Philip. "Science, Meaning, and Metaphysics: A Tribute to Wolfhart Pannenberg." *Interdisciplinary Science Reviews* 28.4 (2003): 237-40. Web. 21 Sep 2018.

"In developing an all embracing theory of meaning that stretches from the physical to the social sciences, and thence to anthropology and theology, Pannenberg postulated conceptual connections that still remain to be explored thirty years later. Equally urgent is his challenge to theologians to accept that the meaningfulness of doctrines and traditions must be continually reestablished for each new generation. As Pannenberg notes in his systematic theology, a religion that ceases to make life meaningful for its followers will ultimately decline to a mere matter of historical or aesthetic interest…"[90]

Third, according to Clayton (and reiterating a point), is Pannenberg's emphasis on the metaphysical, which for Pannenberg (as I mentioned above), extends beyond a tribal understanding of the God of a particular religious tradition.

"Pannenberg succeeded in linking the religion–science debate with classical metaphysical topics in a way that remains unmatched in most of the field today. He frequently identified themes that are raised but not answered by the sciences – such as contingency, temporality, subjectivity, and emergence – and then connected them with the resources of classical metaphysics."

…can we discover from within the sciences those overarching themes which, if systematically developed, can lead to a single metaphysical vision of the world in which both science and theology have a place?" [91]

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[90] ibid
[91] ibid

This latter question drives towards what Barbour calls "Integration" (as opposed to compartmentalization) in his four-fold typology of the ways in which science and religion interact.[92]

All of these discussions of course are taking place around us within academia, and much of this discourse happens at a level that is inaccessible to the average person in the pew, in particular, those tasked with Christian education and faith formation within congregations. But Pannenberg and others (Clayton, Suchoki) and the philosophical approach of Polanyi described in chapter three could provide a foundation of a very different approach to how we engage in Christian education and faith formation within the Christian community. How do we move from the appropriation of dogma to the full exploration of ourselves as (to reference Pannenberg's thought), "finite beings, held within a unity that is the infinite"?

5.3 Foundations for Integrative Pedagogy in Christian Education/Faith Formation in a scientific milieu

Heinz Streib, a professor of Religious Education who writes on both psychology of religion and metaphor and symbol in faith development, proposed an approach to faith formation that is a departure from dogmatic education and fundamentalism, which, as I have described, are the nemesis of any integration of science and theology. Religious fundamentalism and its rigidity of thought (in divine causality, specific teleology, and closed view of the human condition) cannot successfully be integrated or made consistent with a scientific worldview without severely warping either one. Streib's *Fundamentalism as a Challenge for Religious Education* offers a new pedagogical and philosophical

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[92] Ian Barbour. *When Science Meets Religion: Enemies, Strangers or Partners.* Harper Collins. 2000.

approach to the basic *purpose* of Religious education. His seven-point proposal finds a strong coherence with the basics of education extrapolated from Polanyi's work (chapter three), that is, education as:

- meaning-making (developing an informed hermeneutic)

- grounded in mythic narrative (sacred story is at its root)

- community-based ritual (practices that re-tell the human story within our life-cycles)

- done in a climate of intellectual freedom and mutual accountability. (to avoid rigidity of thought or uninformed acceptance of dogma)

Streib outlines the following:

1. "Religious education should be a process dealing with perplexity and astonishment, rather than providing a flood of answers to which the students do not know the question."[93]

Another word for this might be *wonder*, and the mindset of continually exploring and opening up questions. Streib is here fostering the attitude of both curiosity and amazement about the world, and the same open, spacious, learner-driven curiosity should be nurtured and encouraged. This recalls the statement made by one student in the *Ask & Imagine* program, who, in a session on ethics, asked "Why can't we ask questions like these in our home congregations?" The student had experienced an educational model where she was expected to learn facts and statements, and hear stories through a particular hermeneutic lens. There was no climate for open questions and exploration.

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[93] Heinz Streib, *Fundamentalism as a Challenge for Religious Education*. Religious Education, 2001. 96:2. p242.

2. "Religious education should be a creative laboratory for thought experiments and for fiction, rather than a curriculum of clear-cut lesson about the facts of one's own religion or another."[94]

Again, an educational model that allows for integration with other disciplines such as science, philosophy and anthropology should expand beyond simply apprehending a monolithic understanding or interpretation about one's own religious practice. Questions of "I wonder how", "What if?" "Imagine if" are integral to this process. Again, it is not an 'anything goes' approach, but rather, how do sacred texts, symbolic rituals and community stories intersect with all aspects of human knowledge? This moves sacred text and ritual participation away from magical thinking and brings it into dialogue in thoughtful ways with a deepening awareness of the role that participation in ritual, and sacred stories have shaped human flourishing throughout time, and *why* we participate in them, and continue to value sacred texts in our context.

3. "*Religious education has the task of overcoming literal faith and nurturing the conflict of interpretations, leading to understanding theological truth as outline, model and thought experiment for our time. Therefore, acquaintance with the diversity of theological thinking is an important goal for religious education in response to fundamentalist tendencies".*[95]

"The established world religions have long perplexed and frustrated people with their conflicting and exclusive truth claims." (Berryman, 2005*).* Literal faith is one of the principal contributors to the supposed 'war on Christianity' that science is said to have

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[94] ibid.
[95] ibid.

wrought. Religious education, therefore, must intentionally strive to overcome literal faith. Introducing a learner to different ways of interpretation and theological understanding fosters not indifference but allows the learner to take a position not simply because it has been inherited; rather, the learner has reflected on its meaning and broader context and relevance for one's own life. This drives towards, I believe, what Pannenberg describes as the interpretation of the Absolute (or infinite) within a finite world. The 'exclusive truth claims' (that is, advocating one's own religious perspective as the sole correct one) promotes divisiveness and the need for defense of this exclusivism against other modes of belief, interpretation or thought. Scientific integration is in this case only of value as it props up or defends particular beliefs. To move the learner away from exclusivism is to move towards understanding a breadth of theological thinking and thus being able to claim one's own with integrity, rather than fear of assault from contradictory meanings/interpretations.

Moving away from literalism also challenges the continued adherence to magical or superstitious thinking as the root of religious belief and practice.

4. "*Religious education needs to promote playful ease, rather than humorless narrow-minded factual knowledge. Playful ease is a habit that we expect to be available in an unrestricted and unspoiled way in childhood.*"[96]

Jerome Berryman explores this more thoroughly in his many writings on the Montessori-based *Godly Play*[97], which incorporates free play and self-directed meaning-making in a child's engagement with sacred story and liturgy. Play is the first language of children,

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[96] Heinz Streib, *Fundamentalism as a Challenge for Religious Education*. Religious Education, 2001. 96:2. p 242

[97] Jerome Berryman. *Godly Play: An Imaginative approach to Religious Education.* Harper, San Francisco. 1991.

according to Berryman, and non-directed, free, spontaneous play is the way children make meaning of their world, and integrate their spiritual experiences. Streib also challenges that educators themselves must reclaim their child-like approach to their own learning, and approach it with openness to new possibilities and unexpected outcomes or interpretations.

5. *"Religious education should nurture the ability to tell and retell, to read and rewrite the story of one's life in one's latest style available."*[98]

"The primary purpose of religion" writes Berryman "is to cope creatively with trouble. Trouble begets stories"[99]. Rewriting, retelling both the sacred story, the story of the community and one's individual story provides a continual development and shaping of identity within one's own specific context. In this way, the educator becomes not a museum curator, preserving a long-gone epoch, but one who forges the foundation of a vibrant and relevant community, deeply embedded into its milieu. To reiterate Clayton's highlighting of Pannenberg's statement: *"a religion that ceases to make life meaningful for its followers will ultimately decline to a mere matter of historical or aesthetic interest."* Retelling our story in the current context (in our case, in a post-modern, technological, pluralistic context) must be undertaken in order to maintain that vibrancy and relevance.

6. *"Religious education should transcend the concreteness of one's own church, community, and religious tradition—which even exceeds the sphere of religion—in order*

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[98] Heinz Streib, *Fundamentalism as a Challenge for Religious Education*. Religious Education, 2001. 96:2. p 243.
[99] Jerome Berryman. "Playful Orthodoxy: Reconnecting Religion and Creativity by Education". *Sewanee Theological Review,* Vol. 48, Iss. 4 (2005): 437-456.

to reflect on nature, culture, and history… religious education has the goal of opening the

students' minds in the "ultimate mystery of being" (Tillich 1931)".[100]

Transcending one's own specific context in a learning situation, by exposure to a breadth

of traditions and disciplines in an interactive way, allows the learner to see one's own

story and perspective in the broader context. In *Evolutionary Faith*,[101] sociologist

Diarmuid O'Murchu writes of the development and growth of theological awareness,

religious knowledge, and ritual practice as part of the evolutionary process of the human

species all of which reflect our seeking after this 'ultimate mystery of being'. To see our

own particular expression of faith practice – (that is, the ways we engage in meaning-

making/metaphors/stories/myths and rituals) in light of anthropological, philosophical,

scientific knowledge does not diminish this quest (for the mystery of being), but rather,

guides us to a deeper understanding and appreciation of its value for human life.

7. "*Religious education, thus understood, is an aesthetic adventure, rather than an*

instruction as it were in hermeneutic objectivity."[102]

Religious education thus must not be reduced to the apprehension of a specific and

exclusive mode of interpreting human life and physical realities. It needs to see itself,

according to this model, as an exploration of all manner of human creativity as

expressions of meaning-making. Christian religious practice retains its integrity, not

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[100] Heinz Streib, *Fundamentalism as a Challenge for Religious Education*. Religious Education, 2001. 96:2. p 243.

[101] Diarmuid O'Murchu. *Evolutionary Faith: Rediscovering God in our great story*. Orbis. Maryknoll, NY. 2002. In this book, O'Murchu also focuses on our search for meaning as rooted in a 'Relational Matrix' with the Divine (the Absolute, in Pannenberg's words) and with the physical world. These ideas are also worth exploring as another informative structure to the reimagining of religious education alongside scientific understanding which does not devolve to simple apologetics.

[102] Heinz Streib, *Fundamentalism as a Challenge for Religious Education*. Religious Education, 2001. 96:2. p 243.

because it is the sole correct response, but because it is a story-in-context of a continually emerging understanding of the self-in-relationship with this ultimate mystery.

It is important that education does not simply default to grasping onto a particular hermeneutic of 'ultimate-mystery-of-being' = classical Christian theology, though through chapters 2 and 4, it is apparent that many of those who attempt to engage science and theology do so with this specific intent. Streib's approach to Christian Education broadens the theological foundations and embraces the possibility of exploring process theology (panentheism) as a means by which science and theology may be more fluently integrated for the learner in an educational process. I explored in chapter 2 how Polkinghorne (and other theologians) reject panentheism; they do so because panentheism does not allow for the definitive teleology of classical Christian theology, or the associated directive models of divine causality in the world. Science becomes a tool to affirm what is already known, rather than science honing and sharpening our theology by making us more deeply aware of how the physical universe works. Education should allow for theology (the human understanding of God's relationship to the world) to be shaped by expanding human knowledge. As Paul Davies argues,

> *"God does not exercise an overbearing influence on the evolution of the universe, thus reducing it to a pointless charade. There is room for human freedom, and room for even inanimate systems to explore unforeseen pathways into the future."* [103]

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[103] Paul Davies. *Teleology without teleology: Purpose Through Emergent Complexity*. Chapter in "In Whom We Live and Move and Have Our Being: Panentheistic Reflections on God's presence in a Scientific World". Philip Clayton and Arthur Peacocke, eds. Wm. Eerdmans. Grand Rapids, MI. 2004. p 100.

5.4 Critical Realism and Christian Education

Wenzel Van Huyssteen has offered a compelling case for critical realism which bears examination as a foundation for Christian Education, but too many authors in the science/theology discourse have laid claim to theological critical realism (because of its roots in contemporary philosophy) and taken these ideas inappropriately down the road of apologetics. In the science theology discourse, critical realism may not be the philosophical approach that will best benefit. Christian orthodoxy (McGrath, Hastings, Martin, and to a certain extent, Polkinghorne) too quickly co-opts the principles of critical realism as a bolster to traditional Christian theology. In exploring these ideas, Martin (and McGrath) tend to argue from the notion of an *external reality that exists outside of the knower* to an equation of that external reality with a Triune God. In this mindset, the inability to 'prove' something with objective certainty is what drives both scientific method (i.e., that knowledge is 'out there' for us to discover, and we do so by amassing sufficient data) and theological understanding (that God is knowable and discernible, even though we cannot definitively prove the existence of God). They are both, within evangelical applications of Critical Realism, driven by this notion of accepting on *faith* an (*the*?) objective reality that exists apart from our own self.

As an example, in an article entitled *Having Faith in our Faith in God: Toward a Critical Realist Epistemology for Christian Education*, Robert Martin proposes an updated approach to Christian Education that, on the surface, has the appearance of broadening the scope of faith formation alongside scientific enquiry. Martin outlines a four-fold approach to critical realism as forming the basis of a critical realist approach to Christian Education; however, it is not one which encourages expansive thought, but rather, one

which attempts to validate foundationalism through a post-foundationalist (critical realist) critical lens.

> *"At the heart of knowledge is faith, fundamentally a faith that a particular reality has an objective existence independent of our consciousness of it ... Because the existence and character of an objective or external reality cannot be proven or disproven with objective certainty, scientists as well as theologians try to amass evidence in support of their understandings. But, at root of all the evidence, is this fundamental, if largely tacit, faith in an objective reality. Without the assumption, that reality exists whether we are aware of it or not, science would be unintelligible."[104]*

Martin's line of reasoning in the preceding quote goes thusly: if science - which has a methodology that is broadly accepted - operates on such assumptions *("reality exists whether we are aware of it or not"*), theology can claim a right to operate on the same assumptions, except the objective external reality is not a physical phenomenon to be explored, but the Triune God expressed in traditional Christian doctrine. It thus becomes an approach that co-opts methodology rather than applies a thoughtful self-examination of ones assumptions, contexts or traditional beliefs as inherited, even when those beliefs are challenged by emerging bodies of knowledge and understanding. Thus, if we simply examine the evidence of history, institution, liturgy and scripture, as lived out by communities of faith, we will be convinced of the Truth (uppercase T) of God expressed in Jesus:

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[104] Robert K. Martin. "Having Faith in our Faith In God: Toward a Critical Realist Epistemology for Christian Education", *Religious Education*. 96:2, (2001) 245-261, DOI: 10.1080/00344080120045. Accessed 30 July 2018.

"A ministry of Christian education that incorporates a critical realist theological perspective must give a proper place to the specifically Christian sources of our knowledge of God. These include the scripture and the historical, doctrinal, liturgical, and institutional elements of the Christian tradition. Yet, the knowledge of God is not limited to those sources alone, and neither can these sources be separated in any way from the communal life of ecclesial communities. For it is in the lived communion among the people of God who share life in Christ that the impersonal sources and elements of the tradition become icons which reflect the Truth and Reign of God. The truth of the various elements of the Christian tradition resides not in themselves but in their relation to the incarnate Truth of God as it is enacted and expressed in the Body of Christ."[105]

Throughout this chapter, I have not explicitly focused on *science* in its interaction with theology. This is because, at its core, the interaction is not about scientific materialism vs. Biblical literalism – despite this often becoming the default, particularly in educational projects. Rather, the intersections of science and theology should be, like any other interdisciplinary study, one in which both disciplines can be sharpened, pruned and allowed to bend in order to be fruitful.

5.5 The Risk of Freedom

In 2017, I led a year-long learning program in a congregation for young people exploring faith questions; it would potentially lead to Confirmation at the end of the process. They came together for a conversation group every two weeks to explore the practices of their

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[105] ibid

faith community, ways of reading scripture, the social and cultural realities in the urban environment and the wider world where they lived. They considered whether the choice to align themselves with the Christian religion - in a new way as young adults - was right for them in this time. Throughout the process, the choice to say 'no' to Confirmation at the end of the process was always a viable and acceptable option. One week before the Confirmation date, 15 year old M. said matter-of-factly, "I'm not going to get confirmed". She couldn't say why, exactly, she just knew it was not a decision or commitment that she was prepared to make. She still wanted to come to youth group, serve in liturgies, go to youth events, and participate in the faith community. But she wasn't sure what or even if she believed in God. She still had questions.

To their credit, the congregation celebrated M. as equally as any other participant in the learning group who were confirmed. They celebrated her presence, her honesty, and her desire to participate in the journey. The celebration was not for arriving at a particular conclusion, or affirming right belief. The celebration was about young people in their midst who wanted to build relationships, ask questions, and experience the life of the faith community and make their own decisions about that.

This story, alongside what has been discussed in this chapter, opens to a question that must be considered in any process of faith formation or religious education, not just one which involves an encounter with science. The question is: Is unbelief an option? (that is, the non-acceptance of a particular religious belief). Does the educational process predicate a specific result in terms of worldview or adherence to a belief system? Does the educational process consider itself a failure if, having engaged in open discourse, a student rejects a particular belief system? Certainly, the aim of education is to expose the student to new ideas, knowledge and ways of understanding. That understanding may be based in

a particular belief system. One hopes, as an educator, that a student will openly engage in exploration, questions, and, potentially, integration.

One of the foundational principles of religious education described in this thesis is that it must happen, as Polanyi described, in a climate of intellectual freedom. Education must not be coercive, and openness in education may lead the students to different conclusions from those of their teachers. This is the risk of freedom, and a risk which educators must be willing to accept. Referring back to the science-theology professor mentioned in chapter 4, who said that a particular resource was 'safe' to use; the professor described it as 'safe' in that it would not offer anything to the student that might challenge, contradict or propose an alternative way of thinking or believing to what was acceptable within a defined evangelical Christian belief. This is not intellectual freedom. A century ago, in his *A Social Theory of Religious Education* George S. Coe affirms this:

> *"To argue that we already possess the truth, since it has been revealed, and that therefore we ought to impose beliefs upon children, betrays an interesting confusion…Even if we train the pupil to say sincerely that it is the Pope, the church, or the Bible to which he submits, this say-so of his is our own handiwork; we have interposed ourselves between the pupil and reality, and we have no guarantee that the truth becomes his own possession. The whole notion of transferring ready-made thoughts to the mind of another is psychologically fallacious…what we have here is neither knowledge nor belief in any vital sense, but partisanship. This kind of instruction in childhood produces…an easily recognized adult type, the man who settles historical and scientific question without historical or scientific study."[106]*

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[106] George S. Coe. *A Social Theory of Religious Education* New York: C. Scribner's Sons. 1917. p 65.

5.6 Conclusion

Ian Barbour asks, "*Can our discussions be both interdisciplinary and interreligious without the danger of imposing the conceptual framework of one discipline or religious tradition on another discipline or tradition?*"[107] In other words, is the only way forward – as adopted by so many authors and educators in the field of science, theology and Christian Education – to use science and scientific worldviews as a means of attempting to retain one specific way of believing? Based on our experience of youth and young adults at *Ask & Imagine*, this restrictive and univocal approach to science and theology may ultimately be unsatisfying to young people and directly contradicts almost every other aspect of their experiences of their world, culture and context. The faith that this enhances is at risk of becoming dogmatic and rigid. Coe notes, "*Religious education must enter directly, not merely by distant implication, into the social struggles of the present*"[108]. The indications of our educational endeavours was that opening young people up to interdisciplinary ways of thinking alongside theology seemed to draw them *closer* to integrating theology into their lives rather than the pushing it away. To give further credence to this, an empirical study of youth and young adults in mainline Protestant churches who are exposed to broad interdisciplinary learning (such as outlined by Streib) might provide more solid evidence to the efficacy of engaging young people meaningfully in discourses of science and theology in the twenty-first century, and their capacity to make deliberate choices to integrate faith more fully - or not - into their lives.

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[107] Barbour, Ian G. "On Typologies for Relating Science and Religion." *Zygon* 37.2 (2002): 345-60. Web. 21 Sep. 2018

[108] George S. Coe. *A Social Theory of Religious Education* New York: C. Scribner's Sons. 1917. p 64.

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