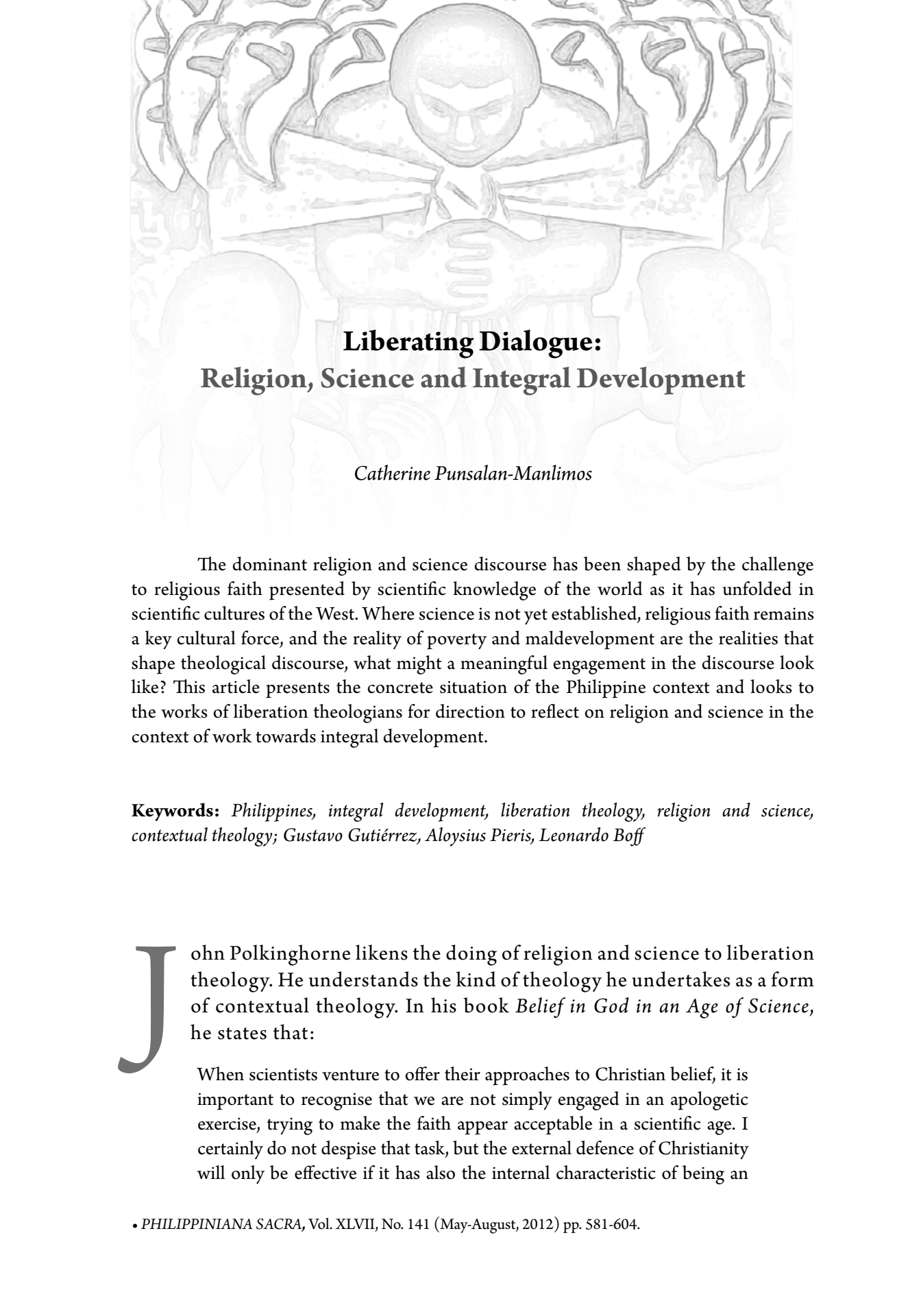




Liberating Dialogue: Religion, Science and Integral Development

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The dominant religion and science discourse has been shaped by the challenge to religious faith presented by scientific knowledge of the world as it has unfolded in scientific cultures of the West. Where science is not yet established, religious faith remains a key cultural force, and the reality of poverty and maldevelopment are the realities that shape theological discourse, what might a meaningful engagement in the discourse look like? This article presents the concrete situation of the Philippine context and looks to the works of liberation theologians for direction to reflect on religion and science in the context of work towards integral development.

Keywords: *Philippines, integral development, liberation theology, religion and science, contextual theology; Gustavo Gutiérrez, Aloysius Pieris, Leonardo Boff*

John Polkinghorne likens the doing of religion and science to liberation theology. He understands the kind of theology he undertakes as a form of contextual theology. In his book *Belief in God in an Age of Science*, he states that:

When scientists venture to offer their approaches to Christian belief, it is important to recognise that we are not simply engaged in an apologetic exercise, trying to make the faith appear acceptable in a scientific age. I certainly do not despise that task, but the external defence of Christianity will only be effective if it has also the internal characteristic of being an

exploration of Christian truth, pursued with integrity and the desire for understanding. Of course, scientific formation in no way provides a uniquely effective manner in which to tackle the task of theology. At best, the activity has its place within a spectrum of approaches that present the opportunities and limitation inherent in a variety of different perspectives on the theological enterprise. The comparison here is with movements such as liberation theology and feminist theology, which also take off from their particular initial points of view.¹

If he is correct in his assessment, then it can be argued that the religion and science discourse can and must, like liberation theology and feminist theology, begin to engage the particularity different socio-cultural contexts in which science comes in contact with religion. While scientists and mainline philosophers and theologians of science will maintain that science is universal, i.e. the laws of physics, say, apply whether one is in the United States, Japan, or the Philippines. Even if this point is granted, the reception and impact of a scientific view of the world is culturally dependent. Once science leaves the confines of the laboratory and enters into the larger social milieu, then the contextual theology that Polkinghorne suggests is being done in a religion and science discourse must begin with the cultural context in which the discourse is being considered. For as liberation and feminist theologians have demonstrated, there is not a singular liberation theology but liberation theologies and feminist theologies that reflect the concrete social and cultural contexts that give birth to them. Similarly, the religion and science discourse, which has predominantly taken place in the West and led by working scientist, will appear different for cultures not themselves shaped by Enlightenment, scientific and technological culture. In fact, just like liberation theology, the conversation between religion and science must be adapted to be meaningful for the particular context in which the conversation takes place. All theology is contextual and the addition of the scientific understanding of the world into the matrix of what informs the articulation of a theology does not negate its contextual nature. The attempt to argue for the universality of the religion and science discourse—because of the universality of science—falls under the same criticism that much of dominant western theology has been subjected by contextual theologians.

Aloysius Pieris, in doing an Asian theology of liberation, emphasizes the importance of inculturation and engagement with other world religions in an attempt to unpack the liberating message of Jesus Christ in Asian cultures most of which are predominantly non-Christian cultures.² In a parallel manner, I want

¹ John Polkinghorne, *Belief in God in an Age of Science* (New Haven and London: Yale University Press, 1998), 85.

² Aloysius Pieris, *An Asian Theology of Liberation* (Edinburg: T & T Clark, 1988).

to suggest that the religion and science dialogue be reframed for cultures that are still largely ‘pre-scientific’³ and decidedly religious in character. The question may arise at this point as to why such an engagement need to take place at all if science has not made an impact in that culture. The answer is two-fold. First, in the global community in which we live today, science and scientific cultures influence all cultures. The way in which ideas traverse the world through multimedia communications guarantee that no culture is immune from such influence. Second, the fact that science has not subordinated religion in a given culture does not mean that the two somehow are not brought into contact and that science does not have an impact on that culture. In fact, it is the importance of science, even if primarily as applied in technology, in the movement towards integral human development that ensure the relevance of the religion and science discourse even for the least scientific of cultures. The difficulties that arise from the interaction of religion and science are not always the ones assumed by much Western discourse. The problem is not always the possibility of ‘belief in God in an age of science,’ i.e., in a secular age. Religion and religious discourse do not need to be justified in cultures that are characteristically religious and pre-scientific. In fact, the opposite is true. It is science that needs to gain wider acceptance and for which a form of apologetics needs to be done. It is science that must be understood from within a religious worldview. For readers who come from a modern scientific context, these claims may seem unusual, so let me introduce the case of the Philippines as an example.

I. Religion and Science in the Philippines

In April 2002, the East Asian Pastoral Institute (EAPI), an international, multicultural, inter-religious pastoral institute in Quezon City held an international conference on Religion and Science. While billed as an international conference, its aim was to bring the religion and science discourse to the Philippines. With the exception of a few international students of the EAPI and invited international speakers, who included William Stoeger from the Vatican Observatory in Arizona, attendees consisted primarily of people from within the country. Attendees ranged from physicists and medical doctors to philosophers and theologians, from reporters to educators, and many others in between. The conference was entitled: ‘Religion and Science: Obstacle to Integral Development?’⁴

³ Writing from a predominantly scientific age, the term ‘pre-scientific’ has a decidedly derogatory ring to it. The intention here is to simply indicate that, in the context under consideration, science is not established as a dominant force that shapes the worldview of a culture. Here, I have in mind Langdon Gilkey’s idea of the ‘establishment’ of science. Cf. *Creationism on Trial: Evolution and God at Little Rock* (San Francisco: Harper and Row, 1985).

⁴ Conference held at the East Asian Pastoral Institute, Ateneo de Manila University, Quezon City, Philippines on 22-26 April 2002.

This was the first such conference on religion and science in the country and the title spoke volumes about the optic through which the religion and science discourse was to be viewed. The conference organizers brought out the critical issue in the discourse for a country like the Philippines in which religion, particularly Catholicism, continues to have a strong influence on society and culture: does the religiosity that characterizes the country and its people and its resultant attitudes towards science stand in the way of the country's pursuit of development? At this conference, the then provincial of the Society of Jesus in the Philippines, Romeo Intengan, presented a paper entitled 'Are We Filipinos Poor Because We Are Mostly Catholic Christians?'⁵ The title immediately draws attention to a critical issue, namely the relationship between Catholicism and the massive poverty that remains widespread in the country. It frankly poses the question of whether the Catholic faith of the people has led to the 'maldevelopment'⁶ of the country.⁷ In the paper, he argues that while Catholicism as such is not essentially incompatible with or an obstacle to integral development, the predominant form it has taken in the Philippines, which is 'privatistic, ritualistic and primarily concerned with institutional interests—has been an obstacle.'⁸ Like the conference title, the paper provides an important clue to understand the larger context to engage religion and science, that is, via the consideration of their role in efforts to overcome poverty and social inequity and work toward integral human development.⁹ To further clarify how the consideration of the relationship between religion and the persistence of poverty is related to the approach to the religion and science discourse in this context, we turn to an examination of attitudes towards religion and science.

⁵ Romeo Intengan, 'Are We Filipinos Poor Because We are Mostly Catholic Christians,' *East Asian Pastoral Review*, 40:3 (2003): 234-43.

⁶ This is the term Intengan uses to more clearly indicate the problem with the development that has taken place in the country. The push for economic development in large part ushered in by efforts in the 1960s failed to take account of the broader dimensions of what constitutes what is now called integral human development. The attempt to apply the develop north's model of development to the 2/3rds world has been seen by liberation theologians as a grave mistake that has contributed to the maldevelopment of these religions of the world. Cf. Clodovis Boff and Leonardo Boff, *An Introduction to Liberation Theology* (Maryknoll: Orbis, 1987).

⁷ Intengan's primary objective is to argue that there are a multiplicity of causes for the poverty that is observed in predominantly Catholic Christian nations like the Philippines and countries in Latin America. The seeming correlation between poverty and Catholic Christian nations and wealth and Protestant Christian nations can be explained by factors beyond religious traditions. The confluence of historical, cultural and social factors that shape the circumstances of these nations prevents an oversimplified identification of Catholicism and poverty.

⁸ Intengan, 'Are We Filipinos Poor...', p. 241.

⁹ It should also be noted that I have used various modifiers to the term 'development' just in this paragraph. The term 'development' without qualification evokes the image of unlimited economic growth. When scholars and leaders speak of development in the Philippines, this is defined as integral human development, encompassing not only economic but also the political, social, cultural and even spiritual dimension of the person.

A. *Social Weather Station Findings on Attitudes towards Religion and Science*

The Social Weather Station, a private non-profit research institute conducted a survey in 1998, which was in large part a parallel of a survey done in 1991 on religiosity and religious behavior, that included two new questions. These questions dealt with attitudes towards science and religion. The addition of questions that deal with religion and science together seem to indicate an emerging awareness of the importance of science for the religious attitude of the people, or at least for those who formulated the questions for the poll. The two statements, which called for a response of strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree, were: 1) 'overall, modern science does more harm than good,' and 2) 'we trust too much in science and not enough on religious faith.' The formulation of the questions already suggests a negative assessment of science and a conflict between science and religion. Interestingly, the questioners pose the second question in terms of a competition between science and religion for the 'trust' or confidence of those polled. Whether the latter question reflects a perception of an already present attitude in society or the bias of those who formulated the question is not possible to determine from the survey itself. The results, on the other hand, are quite revealing.

The responses to the former, while they lean towards the positive end, 'are not convincingly in favor of modern science.' The results show that 38% of those polled agreed or strongly agreed with the proposition 'science does more harm than good, while 30 % disagreed or strongly disagreed. Nearly a quarter of those polled, 28%, neither agreed nor disagreed.¹⁰ The second statement had even closer numbers.¹¹ While 33% agreed or strongly agreed with the statement that 'we trust too much in science and not enough on religious faith, 35% disagreed or strongly disagreed. Again, almost a third or 30% neither agreed nor disagreed.

After an examination of the data, sociologist Ricardo Abad, states that: 'this spread of opinions indicates public uncertainty about the roles of religion and science as a source of *knowledge* [*italics added*]. It is, however, not a very encouraging climate for scientific work, especially now when state and schools seek to upgrade the level of technological competence in the country.'¹² The ambivalence towards science indicated in the results is problematic when seen within the larger context of the effort to move towards integral development, which includes but is not limited to economic development. In such efforts, the role of science and technology are critical. But, unlike Abad, I would argue that it may not be as sources of *knowledge*

¹⁰ Abad, 'Religion in the Philippines,' *SWS Occasional Paper* (January 2002): 18-19, 21.

¹¹ *Ibid.*, 19, 21.

¹² *Ibid.*, 19.

but as sources of power and efficacy that these are being viewed. That is, the question of the veracity of truth claims that follow from both ways of knowing our world may present less of an issue than the question of the dependability of one or the other of providing solutions to people's concrete, everyday life challenges, especially those created by poverty. The question is one that asks to whom or what one should turn for help to ensure a bountiful harvest or maintain the health and physical well-being of members of the family: religion or science, God or human beings. In any case, such a situation does not bode well for efforts towards improvement of the climate for scientific and technological work.

B. Absence of a Science Culture: Engineering and Science Education Project Report

The unfavorable climate for the development of a science and technology¹³ culture is noted in a report on the implementation of the *Engineering and Science Education Project*, which is a UN-sponsored project aimed at the improvement of the quality of science education in the Philippines. The primary objective of the project is 'to support technology development for industrialization in the Philippines by increasing the supply of well trained scientific and technical (S & T) manpower.'¹⁴ The project is innovative in its efforts and approaches, and comprehensive in its vision. Strategies include support of science high schools, construction of science libraries and laboratories in target universities, and sponsorship of the higher education of future scientists and engineers and science and engineering educators through scholarships to both domestic and international institutions of higher education. The report, presented by Bienvenido Nebres and Miren Intal, highlights the cultural difficulties that impeded the implementation of the program. There are various subcultures, which include those of the universities and of government, that fail to appreciate the importance of science and technology for development. The report notes that:

¹³ While the terms that are commonly used with 'culture' are the adjectives 'scientific' and 'technological' as modifiers of culture, I will at times use the terms 'science' and/or 'technology'. The idea of a scientific and technological culture indicated a broader cultural context in which science and technology are 'established.' In using the terms 'science culture' and 'technology culture,' I am referring a cultural milieu in which work in science and technology is cultivated, supported and sustained. In the former, the idea is that science and technology are already cultural forces that shape the larger cultural milieu while in the latter the idea is to create a sub-culture within a larger non-scientific/non-technological cultural milieu that would support the work of science and technology as opposed to working against it. In short, while the phrase 'scientific and technological culture' points to science as a cultural force, the phrase 'science and technology culture' refers to a context in which science as method and content can thrive.

¹⁴ Bienvenido Nebres and Miren Intal, "Science and Technology Policy and Program Innovations and the Social Sciences: The Case of the Engineering and Science Education Project (ESEP)," Paper presented to the NAST Annual Scientific Meeting, Manila, 8-9 July 1998, p. 2.

On the political level, the issue that surfaced is that it is not clear to people, even among our top government decision makers, that science and engineering have a particularly important role in the development of the country. Our top government decision makers tend to see the development dynamics in terms of regulation law or in terms of finance and marketing. There is as yet little priority given to the S & T part of development.¹⁵

Worse still, even universities lack a culture that promotes research and mentoring. There is little incentive for those in the areas of science and technology. While the science and technology-oriented high schools that were included in this program numbered at 110, many of the graduates of these institutions enter such fields as law, medicine and business.¹⁶

One of the conclusions that the Nebres and Intal Report draws is that ‘the ESEP brings out the formidable challenges to the development of a science and technology culture in the country. This is because existing values, capabilities, and situational factors in the socio-cultural environment are not very compatible with a science and technology culture.’¹⁷ Meanwhile, the very existence of ESEP attests to the importance being placed by some in the country and ESEP’s funding institutions on the advancement of science and technology in the work for integral development. At the same time, it should be noted that there is increase influence of science and technology, if only in the form of pop-science and pop-technology, both positively and negatively manifested.

C. Science, Technology and Power: Popular Culture Considered

Jose Mario Francisco studied Filipino literature and cinema to uncover popular perceptions of religion and science to further confirm a generally negative perception of science in popular culture. He explores various popular genres from comic books and novels to television shows and movies. In this study, he noted natural science and its allied disciplines do not commonly make it into popular narratives at all. He posits that ‘this might itself be an indication of the lack of awareness about science and its significance.’¹⁸ Nevertheless, with a focus on characterization and narrative themes, he identifies underlying attitudes towards science in various works.

¹⁵ Ibid., 8.

¹⁶ Ibid., 12.

¹⁷ Ibid., 10.

¹⁸ Jose Mario Francisco, ‘Popular Perception of Science and Religion: Implications for the Science and Religion Dialogue,’ in *Science and Religion... and Culture in the Jesuit Tradition: Perspectives from East Asia* (Hindmarsh: Australian Theological Forum, 2006), 56.

He notes that scientific knowledge is frequently aligned with dominant power or with anti-heroes. For example, in comic book series, the villain is often the one depicted as using scientific experiments to bolster his/her power to accomplish a plot to take over the world. In other cases, corrupt politicians are shown as the sponsors of science with the intent of using science to maintain their power. In fact, Francisco notes that the only really common positive presentation of scientific knowledge is when it is acquired by the medical student who uses his/her medical education to help the poor in the country side.¹⁹ With few exceptions, it is only the rural doctor who is depicted as doing something positive with scientific knowledge.

At the same time, his survey of works reveal that churches are seen as places of refuge and religious figures are depicted as spiritual guides. In fact, the positive attitude towards religion 'is reinforced through counter-examples of villain-priests ... [who] are condemned because of their betrayal of the transcendent values of religion and their abuse of religion for power and pleasure.'²⁰ At the end of his survey, he concludes that:

In keeping with the extensive presence of Christianity in Philippine society, narrative settings, characterisations and themes emphasise faith as trust in God shown in moral behavior consonant with cosmic and social order. Science is often seen to be in conflict with religion and is represented by the stereotypical mad scientist obsessed with knowledge and motivated by greed and power. In stories that positively depict characters with scientific backgrounds or describe situations of some form of collaboration between science and religion, religious faith remains more fundamental than science.²¹

In fact, he finds evidence of this not only in the world of non-fiction but in history. Francisco recalls a barrio in Bacolor, Pampanga, a town devastated by the avalanche of pyroplastic material (lahar) for years after the 1991 eruption of Mt. Pinatubo in Pampanga. Along with government efforts to build megadikes to hold back deadly flows of lahar, the Archbishop of the province, Arch. Paciano Aniceto, 'appealed to the people to pray so that the province would be saved from more suffering.'²² In the same series of newspaper articles to which Francisco refers, he notes how scientists accused government officials of failure to consider science in the creation of their proposals to respond to the danger.²³ These two examples suggest

¹⁹ Ibid., 56-60.

²⁰ Ibid., 53.

²¹ Ibid., 60.

²² 'More cracks in dike,' in *Philippine Daily Inquirer* (5 August 1996), 1, cited in Francisco, 'Popular Perceptions ...,' 51.

²³ Francisco, 'Popular Perception ...,' 51.

a popular religious reliance on the miraculous coupled with a failure to appreciate the importance of scientific knowledge to address what is largely an engineering problem.

This study confirms how difficult it is to optimize the potential contribution of science and technology in the work for integral development in the country as both the Abad analysis of the SWS survey and the Nebres and Intal Report indicate. A weakness in science education and a lack of a science culture is coupled with a popular perception of religion and science as competing sources of power. Science is seen as a tool of domination in a still largely religious culture with a colonial and neo-colonial history that has shaped how the exercise of power is understood.

For places like the Philippines, where religious faith and maldevelopment are dominant social realities, there is a need to articulate religion and science dialogue that underscores the meaningfulness of science in the work towards integral human development. The dialogue is one where any apologetics that is undertaken is one that is on behalf of science. Science, as a discipline that seeks natural explanations for natural phenomena in order to know and understand the world, needs to be accepted as valuable for the larger aim to improve the quality of life of millions who suffer from the death-dealing consequences of poverty. If religious faith continues to play the dominant role that shapes how people understand themselves and the world around them, then science must be understood within this larger worldview rather than in competition with it. Third World liberation theologies have retrieved the liberating message of faith, a liberation that includes the attainment of freedom from the bondage of poverty and oppression. That science has the potential to contribute to the task of the work of liberation, which includes liberation from the bondage of hunger and human diseases and the shackles of ignorance that allow the maintenance of practices that destroy peoples and ecosystems makes it invaluable in the articulation of a liberation theology in the 21st century.

The reason to engage the religion and science discourse for a religious context faced with issues of social injustice is radically different from the kind of religion and science dialogue in which Polkinghorne and many theologians of the developed North engage.²⁴ The goal in such a context is not to demonstrate the meaningfulness

²⁴ Those who argue against creation science and intelligent design can be seen as undertaking a similar task insofar as they argue for the compatibility of science, particularly Neo-Darwinian evolutionary biology with religious faith. Yet, this engagement remains distinct because it takes place within a scientific culture, that is, a culture in which science is culturally established. The argument, as it has recently unfolded, has revolved around what constitutes a scientific theory and whether or not intelligent design is a viable alternative scientific theory that should be taught alongside evolutionary theory in public schools. A recent interesting work around this issues is Kenneth Miller, *Only A Theory: Evolution and the Battle for America's Soul* (New York: Viking Penguin, 2008).

of religious faith within a scientific worldview; it is rather to demonstrate the meaningfulness of the scientific task within a religious worldview. Furthermore, whereas much of the religion and science discourse in the dominant north focus on the cognitive coherence that exists between religious faith and scientific knowledge of the world, the dialogue that emerges from the context we have described must speak to the practical importance of science in response to the demands of religious faith, particularly in the work for the liberation of the oppressed from all that stands in the way of their full self-actualization, especially the material poverty in which they exist. The contextual theology of science that is being sought here must simultaneously consider: a) the religious faith of an explicitly religious culture (versus a predominantly secular culture); b) the challenge of maldevelopment and poverty (versus economic development or superdevelopment and material excess); and c) the absence of a science and technology culture (versus established scientific and technological culture).

II. Religion and Science and Third World Liberation Theologians

How might such an engagement begin? What are possible paths that can be taken in order to begin a dialogue between religion and science along these lines? Are there theologies or theologians that might shed light on a strategy to bring these elements together? Because the goal is to bring together the elements of a) religiosity, b) maldevelopment and poverty, and c) science and technology, two possible approaches come to mind. First, the confluence of religion and science is systematically engaged by theologians in the developed North. While the insights and methods that continue to be unfolded in these conversations cannot be ignored, I have already shown they are not primarily concerned with the challenges and questions that emerge from the context being considered here. Second, I have already suggested that Third World liberation theologians are an important guide to reflection on the convergence of religious faith and the experience of poverty and the struggle for justice. The question remains whether or not these theologies already include a consideration of science and technology or are methodologically open to the inclusion of science and technology in the on-going reflection of the meaning of faith in the face of oppression and dehumanization. Is it possible that the method of liberation theology already contains within it a way to think through the role of religion and science in the work for integral liberation?²⁵ In the remainder

²⁵ I want to be clear that in this work, liberation does not only refer to economic, political and cultural liberation. Latin American liberation theology has suffered from misunderstanding by those who fail to recognize that the liberation it seeks is the liberation from sin and death, made possible only through the work of God. That sin and death are manifested in unjust social structures and warped human relationships means that the struggle against sin must include a struggle against social injustice. But this does not reduce the struggle against sin to a struggle against social injustice.

of this paper, I will undertake a preliminary examination of the way three liberation theologians, Gustavo Gutiérrez, Aloysius Pieris and Leonardo Boff, have engaged science and technology in their liberation theology in to find clues for a meaningful way to engage religion and science within the context of a faith-motivated work toward integral human development.

A. Gustavo Gutiérrez: Religion and Science Discourse as Distraction

Gustavo Gutiérrez's seminal work, *A Theology of Liberation*, has a positive assessment of modernity and the contribution of science in doing a liberation theology. After all, it is the social sciences that function as the key analytical tools used by liberationists to unmask and name the systemic roots of poverty. The weight of the argument to move beyond acts of charity to solidarity rests upon the ability to show that poverty is rooted in identifiable, entrenched relationships and institutions that benefit a few at the expense of many. Central to the liberationist agenda is to show that the poor are not simply poor but are victims of unjust social structures and institutionalized violence and, consequently, are potential agents of change. This calls for a move beyond anecdotes of the plight of the poor to critical scientific analysis of the causes of poverty. While the science in question here are the social science rather than natural science, a modern scientific worldview and approach to the problem proves to be essential to the work for liberation.²⁶

Gutiérrez recognizes the importance of science and technology both as influencing human beings' self-understanding and their understanding of their relationship to others and to nature.²⁷ He traces the development of modern thought to its roots in the birth of modern physics.²⁸ He acknowledges the role that the natural sciences have played in the formation of a way of understanding the world that recognizes human beings empowered agents of change. The emphasis on the importance of human liberation and freedom, the value of a rational understanding of reality, while having distinct nuances in the context of the struggle of the poor of Latin America, are traced back to the Enlightenment and European intellectual history.²⁹ At the same time the emphasis on knowledge confirmed and born of praxis along with the valuation of praxis over mere theory characterizes modern thought. A whole new way to think about and understand the world is born. This new way to

At the same time, overcoming economic oppression does not necessarily lead to freedom. In fact, as this work will later develop, Aloysius Pieris argues that many need to be freed from the bonds of acquisitiveness and mammon.

²⁶ Gustavo Gutiérrez, *A Theology of Liberation*, (Maryknoll: Orbis, 1988).

²⁷ Ibid., 7, 11.

²⁸ Ibid., 17-22.

²⁹ Ibid.; Gutiérrez, *The Truth Shall Make You Free* (Maryknoll, NY: Orbis Book, 2000) 89-94.

arrive at knowledge that begins from experience and in search of underlying causes of immediate experience, leads to a new way to understand even the reality of poverty and the challenges that it poses to the faith.³⁰ The ability to name the root causes of poverty and social injustice leads to the ability to effectively struggle against these. Poverty is not divinely ordained but a product of human acts.

At the same time, it is precisely his concern with social injustice that keeps science and technology from the forefront of Gutiérrez's theological agenda. To acknowledge the importance of science for a more robust knowledge about the world does not mean to participate in the conversation around the metaphysical and epistemological implications of science and scientific knowledge on religion. In fact, he sees Europe's preoccupation with science and religion as a distraction from the challenges to the faith presented by the misery of the poor of the world.³¹ Even as Europeans and others in the developed north confront the phenomenon of secularization that is in part due to the rise of science and technology, Latin America faces a different cause of secularization, that of political ideologies and activism born of the desire to address the situation of the victims of social injustice.³² As such, the theological questions that arise and that must be addressed are different. They are the questions of the 'non-person' and not of the 'non-believer'.³³

He recognizes that science and technology present new elements in the division between wealth and poverty.³⁴ Scientific and technological knowledge now creates a new source of marginalization of the poor who do not have access to it. Such know-how further concentrates power and wealth. While science and technology are important in the work of bettering the living condition of the poor, liberation has to

³⁰ Gutiérrez, *A Theology of Liberation*, 13-25. In these pages, Gutiérrez traces how modern science gave birth to modern thought, which includes the ideas of the likes of Marx and Freud. He traces how modern thought have contributed positively to anthropology as human beings become understood as historical and creative of their historicity, of their future. He gives a very positive reading of the modern understanding of the human being.

³¹ Ibid., 101-102. One gets that sense that Gutiérrez finds a European reading of the currents of history as an optimistic evolutionism. History is understood in terms of progress and development. Consequently, the reality of poverty and justice become peripheral and fail to influence theological thinking. He looks upon the works of Teilhard de Chardin as influential in the creation of this evolutionary apolitical approach. The science and religion conflict is undertaken as a neutral, apolitical challenge to the faith. But the history that gave birth to this challenge is the same history that gave birth to the misery of the poor. Cf. endnotes # 91 and # 92.

³² Ibid., 42-43, and 193, endnote #18. *The Truth Shall Make You Free*, 23-27, 32. The same phenomenon can be observed in the Philippines, especially in the attraction of the Communist Party of the Philippines even on clerics. And yet, for the Philippines, a dramatic shift can be observed in universities as the activism of the '60s, '70s, and '80s give way to the turn to technique or technology as a way to better address the situation of poverty. The failure of socialist movements during these decades have helped lead to this shift.

³³ Gutiérrez, *A Theology of Liberation*, pp. xxix.

³⁴ Gustavo Gutiérrez, *Density of the Present* (Maryknoll, NY: Orbis Books, 1999) 133.

do with far more than their economic condition. While advances in bio-engineering may improve crop yield and pest resistance, it does not guarantee access to food for the world's hungry. In fact, in many cases, scientific advances have led to further victimization of the world's poor.³⁵

The liberation that is sought in this theology is integral liberation, liberation from all that binds the human being and prevents persons from realizing their fullest selves. It is liberation that Gutiérrez recognizes as possible only in and through Jesus Christ. Liberation is ultimately *from* sin and *for* love, a reality that must be made manifest both on the social plane in the form of a more just and humane society and in the personal plane as a recognition and ownership of one's freedom and dignity. And the mere advance of scientific knowledge does not speak to this.

B. Aloysius Pieris: Science and Technology, Poverty and Asian Religiousness

The assessment that Gutiérrez gives of the contribution of modern scientific thought to the development of a liberation theology brings to light the cultural impact of science and the possibilities that exist for its contribution to the work for human liberation. At the same time, liberationists like Leonardo Boff and Aloysius Pieris, point to the hubris that has come with these developments, the same hubris behind the colonization and domination of peoples. It is interesting that the history of the birth and development of modern science coincides with the period of colonial expansion of Europe. When people have been the victims of colonization, there are layers of cultural domination that contribute to the complex causes of the exclusion of millions of human being, of their relegation to the margins of society, of their oppression. According to Pieris, science and technology play a role in the dynamics of domination that is observed in the process of colonization.

Aloysius Pieris, who writes out of his experience in Sri-Lanka, develops a liberation theology out of a context he describes as characterized by the double

³⁵ In agriculture examples abound, from the Green Revolution of the 1960s to genetic engineering of more recent times, of promised improvement to food yield that result in the destruction of the fecundity of soils and human beings to the dependency of farmers on transnational corporations. Cf for example: Vandana Shiva and Tom Crompton, "Monopoly and Monoculture: Trends in Indian Seed Industry" in *Economic and Political Weekly*, Vol 33, No. 39 (Sept. 26-Oct. 2, 1998): A137-A141, A144-151. URL: <http://www.jstor.org/stable/4407211>; B. V. Krishna Murti, "Supplanting Peasant Agriculture with Plantation Economy," *Economic and Political Weekly* 21(13), 525-27. URL: <http://www.jstor.org/stable/4375474>. Accessed 22 May 2009; John Soluri, "Accounting for Taste: Export Bananas, Mass Markets, and the Panama Disease," *Environmental History*, Vol. 7, No. 3: 386-410. URL: <http://www.jstor.org/stable/pdfplus/3985915.pdf>. Accessed: 22 May 2009; Jorma Toppari, et. al., "Male Reproductive Health and Environmental Xenoestrogen," *Environmental Health Perspectives*, Vol. 104, Supplement 4 (Aug., 1996): 741-803. URL: <http://www.jstor.org/stable/3432709>. Accessed 18 May 2009.

reality of poverty and ‘religiousness.’ In Asia, not unlike Latin America, liberation theology is done out of the experience of those who are victims of various forms of oppression. But, in this case, the religions of many of the victims are not Semitic and are suppressed by western Christianity and western development ideologies. He argues that the suppression of this religiousness is a form of the cultural oppression of the poor that comes with the western promise of development.

In his articulation of a Christian theology of liberation within Asia, he contends that western Christianity and the theology that came with the early Christian missions cannot simply be taken over without regard for the religiousness of Asian cultures. While his particular focus is on the influence of Buddhism on Asian religiousness, his general thesis points to the necessity of engaging the particular religiousness of a culture, which is critical for an authentically contextual theology. In his case, this means engaging multi-religious base communities.

Pieris identifies various theological tensions found within this context that help to define the challenges that need to be addressed and it is within these tensions that he explicates the role of science and technology in doing theology. The first of these is the tension between liberation and inculturation. Whereas these two concerns are more commonly pitted against each other on the theological agenda in Asia, he understands them as being intricately united if not one. He points out that inculturationists who attempt to address the challenges presented by religiousness without attending to the fact that the majority of Asians are poor will be unable to perceive the difference between the culture of the elite and the culture of the poor. This leads to unexamined presuppositions about whose culture is being used normatively in the task of inculturation. In a context where poverty is such a dominant reality, there can be no true inculturation that does not address the issue of liberation and examine the relationship of the culture of the elite and the culture of the poor. On the other hand, liberationists who fail to recognize the role of religions in the lives of the Asian poor will fail to utilize the liberating message found within these religions. At the same time, the need for religious liberation, that is, the need to bring about liberation from religious bigotry will be missed. The zeal for the proclamation of a liberating Christian message is often done at the expense of recognition of the liberating message of other religions and consequently their devaluation or outright squashing. When this happens, that which is supposed to free becomes that which oppresses and dehumanizes. Much of the long history of Christian missions can attest to this. The confluence of poverty and religiousness as theological challenges in Asia must bring the insights of inculturationists and liberationists together to accomplish the task of articulating Asian theologies.³⁶

³⁶ Aloysius Pieris, *An Asian Theology of Liberation*, 56-58.

A second tension that provides a different texture to Pieris's liberation theology flows from his immersion with those who are both poor and Buddhist. He presents the theological challenge in terms of a conflict between God and mammon. He claims the need for liberation from the allure of mammon as more central than the eradication of poverty as such. Oppressive poverty is a consequence of acquisitiveness. Thus, he focuses on the need for liberation from acquisitiveness.³⁷ The choice to enter into actual poverty is valued not as a protest against imposed poverty but as a rejection of mammon.³⁸ Without rejecting the importance of the social aspect of liberation that has been emphasized by Latin American liberation theologians, he emphasizes the contribution of Asian spirituality by highlighting the importance it gives to the psychological level of liberation, liberation from mammon. He argues that:

In an Asian situation, the antonym of 'wealth' is not 'poverty' but acquisitiveness or avarice, which makes wealth anti-religious. The primary concern, therefore, is not eradication of poverty, but struggle against mammon—that indefinable force that organizes itself within every person and among persons to make material wealth antihuman, antireligious and oppressive.³⁹

Awareness of the difference between the eradication of poverty and the overcoming of acquisitiveness is critical when confronted with the contradiction between the creative potential of science and technology and their actual role in the perpetuation of the marginalization and suffering of the world's poor. While science and technology may contribute to economic prosperity, they also perpetuate the culture of acquisitiveness by fueling the culture of the desire for the "newer and the better."

The third tension, which is the coming together of cosmic and metacosmic religions, also plays an important role for his understanding of Asian religiousness. The term 'cosmic' is his alternative to the term 'animist,' which is used by anthropologists studying these religions. He defines metacosmic religions as 'religions that postulate the existence of a transphenomenal Reality immanently operative in the cosmos and soteriologically available within the human person either through agape (redeeming love) or through gnosis (redeeming knowledge).'⁴⁰ He claims that the reason

³⁷ One of the challenges faced by any liberation theology is always the tension between individual conversation and social change. The temptation exists to try to understand these as temporally rather than dialectically related.

³⁸ It must be noted here that even as this is the case, Pieris explicitly says that voluntary poverty must be directed positively towards the alleviation of the poverty of the masses. *Ibid.*, 57.

³⁹ *Ibid.*, 75.

⁴⁰ *Ibid.*, 54.

western religions are not dominant in Asia,—with the exception of Catholicism in the Philippines and Islam in Indonesia—is the presence of established metacosmic Asian religions.⁴¹ In contexts where cosmic religions exist without a metacosmic religion to provide an overarching soteriology, the Semitic religions of the West took hold.

The role and relevance of science and particularly technology are understood within these layers of tensions and relationships. The tensions point to a colonial past for many parts of Asia that persists in the form of neo-colonial influence, especially in the understanding of progress. He notes how a theological justification of a development ideology leads to the suppression of cosmic religions in the name of efforts to overcome poverty and underdevelopment. He states that ‘one is annoyingly amused’ when considering the developmental claim that: ‘the scientific and industrial revolution, with its modern secular culture, is to be welcomed as the fruit of (Western) Christianity; hence Christianity should carry this mission to Asia and liberate its masses from superstitious religiosity!’⁴² He notes that ‘the implication of this thesis seems to be that the church’s mission is to use Western ideology and theology to eradicate at once the religiosity and the poverty of our continent.’⁴³ With this model of development, there is a simultaneous attempt to consider the economic liberationist agenda at the expense of culture, the introduction of the culture of mammon at the expense of religiousness and the suppression of the cosmic religions of Asia in favor of the metacosmic religion of Christianity.

Within the above vision, it is an instrumental scientific and technological worldview that replaces the cosmic worldview of peoples. Cosmic religions are the ways in which peoples traditionally deal with the mysterious in everyday life. Insofar as science appears to provide answers to the working of the natural world and technology provides the know-how for dealing with much of its uncertainty, they appear to exorcise cosmic forces from the world stage. Rather than religious rituals as media to engage these cosmic forces, he reads technology as an alternative means to gain control over them. Knowledge and control of these forces overcomes “superstition.” However, because cosmic forces are not simply the forces of nature but a multiplicity of forces that operate in daily life, he claims that technology does not in fact lead to control over them. Insofar as technology is not able to address the ambiguities encountered in everyday life, it does not render cosmic forces under control. But insofar as technology renders obsolete the rituals through which human beings express their deepest yearnings, he claims that technology takes away the

⁴¹ Ibid., 71-75.

⁴² Ibid., 79.

⁴³ Ibid.

cosmic religion of the poor and replaces it with 'neurosis.' He insists that religious rituals for dealing with the cosmic forces of everyday life are replaced by human subjugation through consumerism, secularism, materialism and the like.⁴⁴

Pieris argues that the advancement of science and technology in the developed North promotes the attitude of acquisitiveness and is another form of anti-religious mammon. Yet he is not anti-technology. He presents a positive Teilhardian reading of technology from an evolutionary worldview. He claims that 'technology is the immediate and inevitable consequence of noogenesis or hominization.'⁴⁵ What he cautions against is 'a dangerous brand of 'neognosticism' that claims the power to liberate humanity resides in the scientific knowledge of nature's secrets.'⁴⁶ He believes that technology needs metacosmic religion to ensure that it moves positively towards humanization. Hominization leads to humanization through 'the revolutionary upsurge of religiousness.'⁴⁷ He claims that a 'unified view of revolution, religion and cosmic evolution imparts a Third World dimension to the understanding of technology and the allied concepts of 'progress' and 'modernization,' and consequently lifts the whole debate on inculturation to another plane.'⁴⁸ In short, it is a (Western) brand or approach to technology to which he objects. It is an understanding of science and technology that is ignorant of and suppresses local cultures, that promotes a culture of mammon, and that is divorced from the guidance of a metacosmic faith that he rejects. Technology that is under the guidance of a metacosmic religion and does not purport to supersede or subsume the cosmic forces operative in everyday life can contribute to the work of integral liberation.

C. Leonardo Boff: Science and Ecology

For his part, Leonardo Boff, Brazilian priest and liberation theologian, has explicitly considered the findings of science and impact of technology in his theological reflections. In his proposal for an eco-spirituality, he is aware of the

⁴⁴ Ibid.

⁴⁵ Ibid., 108. Here, Pieris is following the thoughts of Pierre Teilhard de Chardin. Teilhard imagines a sphere beyond that of the animal sphere in which a conscious soul emerges, 'a human sphere, a sphere of reflection, of conscious invention, of conscious soul.' Cf. Pierre Teilhard de Chardin, *The Vision of the Past* (New York: Harper and Row, 1966) 63.

⁴⁶ Pieris, *An Asian Theology of Liberation*, 80. Here he refers to Langdon Gilkey's myth of the 'new scientific man.' Cf. *Religion and the Scientific Future* (New York: Harper and Row, 1970) 76-77.

⁴⁷ Pieris, *An Asian Theology of Liberation*, 104. In another place he states that: 'A [humanly] induced cosmic process, which is a conscious [i.e., self-reflective] continuation of [infrahuman] biological evolution and, like the latter [i.e., like biological evolution], becomes humanized [i.e., liberative] only by its metacosmic orientation [i.e., by the revolutionary thrust of religion toward ever nobler levels of human existence].' Ibid., 108.

⁴⁸ Ibid.

possible tension between ecological issues and the quest for human liberation. The concern of the North about ecology can be seen as an obstacle to or a distraction from the issues of the South, which revolve around the work for the liberation of the victims of poverty. At the same time, the liberation of the oppressed does not automatically translate into a respect for the Earth. On the contrary, liberation of the great majority of humanity who suffer today can have dire consequences for the other species on the planet. He recognizes that the very situation of want in which the world's poor find themselves is often the cause of their failing to see the far-reaching consequences of their action for the earth in the desire to meet their immediate need.⁴⁹ Nevertheless, he recognizes that the same logic that leads to the degradation of the planet is behind the inhuman conditions of the majority of the peoples of this world.⁵⁰ Specifically, he identifies the human will to power as domination as the root of these tragedies.

Ecology is fundamental concept for Boff. The basic idea is that everything is related to everything else. This includes a relationship in time to the past and to the future. The sense of relatedness and solidarity that an ecological worldview calls for is not just between species on the planet but from the smallest particle here to the most distant galaxy. It means relating everything to the past, in the context of their genealogy, and relating everything to the future in order to have a sense of solidarity even with coming generations. 'Ecology seeks a vision of the whole not derived from the sum of the parts but from the organic interdependence of everything with everything else.'⁵¹

To the objection that ecology is a luxury for the rich, he asserts that the problem is so great that it is not just the problem of the industrial nations who are responsible for much of the despoliation that we see. At the same time, the critique that comes from the South can help broaden the perspective of the ecologically-concerned in the North by showing them the need to be critical of the very models of society and development that are at the root of the crisis. In short, their call for conservation and environmental consciousness does not necessarily include an awareness of their own embeddedness in the paradigms that have led to the problems.⁵² He boldly identifies one of the underlying causes of the destruction of the natural world as the model of civilization found in the West, a model of civilization that, while empowered by

⁴⁹ Leonardo Boff, *Ecology and Liberation* (Maryknoll: Orbis Books, 1995), 21.

⁵⁰ He claims that '[t]he same logic of the ruling system, based on profit and social manipulation, that leads to the exploitation of workers, also leads to the spoliation of entire nations and eventually to the depredation of nature itself.' Cf. Leonard Boff, 'Liberation Theology and Ecology: Alternative, Confrontation or Complementarity?' in *Ecology and Poverty*, Leonardo Boff and Virgil Elizondo, eds. (London: SCM Press and Maryknoll: Orbis Books, 1995) 73.

⁵¹ Boff, *Ecology and Liberation*, 10-11.

⁵² *Ibid.*, 12-13.

science and technology, employs power as a tool for domination. He acknowledges that much of early technologies have contributed to the destruction of ecology. At the same time, he is clear that this is especially so because it is technology propelled by a view of development grounded on the myth of progress, which in turn exists within societies that see as goals unlimited growth and continual expansion of consumer markets. These models are easily supported by an anthropocentrism that is traced back to the 'Judeo-Christian' roots of cultures.⁵³

Boff present a scathing critique of western civilization in which the modern scientific worldview results in a valuation of the non-human world as a mere instrument for human ends, ends that prove, in fact, to be without end, i.e. without limits. But, if this worldview is at the heart of the rape of the non-human world and the oppression of the weakest in the human world, he suggests that an alternative scientific worldview can lead to a new way to conceive the human relationship to the non-human world. A contemporary cosmological vision that highlights the interrelationship among all reality in the cosmos is the key. He locates the human being within the history of the cosmos as a late addition to the cosmic family with a unique capacity to impact the rest of the cosmos, especially the earth and its inhabitants.

He insists on an ecological culture with its alternative forms of 'behavior and practices that embody a vision of the world as a whole and thus lead to greater concentration and concern in our confrontations with nature.'⁵⁴ But this focus on nature is not at the expense of the concern for the most vulnerable human beings. From an ecological perspective, he understands human beings, whose very existence is endangered by hunger and want, as the most vulnerable of the Earth's creatures.⁵⁵ He declares that 'the most threatened creatures are not whales but the poor, who are condemned to die before their time.'⁵⁶

As a liberationist, he maintains a critical stance against ecological approaches that lack sensitivity to the issues of the poor. The desire to promote conservation or environmental concern can often lead to policies that are absurd from the perspective of the poor. One of his examples is the concern with ensuring foodstuffs are organic and additive-free in a context where people do not have enough to eat. Even in the concern for ecology, there must be more than sporadic intervention but a global policy that can safeguard all aspects of human ecology or social ecology.⁵⁷

⁵³ Leonard Boff, *Cry of the Earth, Cry of the Poor* (Maryknoll, NY: Orbis Books, 1997) 64-81.

⁵⁴ Boff and Elizando, 'Ecology and Poverty', 19.

⁵⁵ Boff, 'Liberation Theology and Ecology', 73-75.

⁵⁶ Boff, *Cry of the Poor, Cry of the Earth*, 110-112.

⁵⁷ Boff, *Ecology and Liberation*, 23,

He understands modernity, which he sees as in large part informed by a Baconian understanding of science, to have exponentially increased the human capacity to act on a negative will to power as domination and to justify these actions. The condition of the non-human world and the most vulnerable of the human population are evidence of this. What is needed in this context is a radical change in worldview, ultimately leading to a change in attitude, behavior, and practice. What ecological thinking provides is an alternative paradigm for understanding our relationship with the whole of creation over space and over time.

The mindset that needs to be changed is one that sees the non-human world as simply a means to fulfill human wants, wants that prove to be inexhaustible. In the civilization shaped by this mindset, science and technology are instruments of unbridled development and consumption. While modern science may have encouraged the attitude of control and domination of that which is perceived as other, that which is set over and against the dominant human beings, he turns to contemporary science to overcome the perception of the non-human world as other. He claims that knowledge of the contemporary story of the universe and our place within it will lead to a new understanding of human beings as part of nature, as born and acting within the complex of an awe inspiring, spirit-filled cosmos. In the new schema, the planet is not an object of human mastery; rather it is home and mother.⁵⁸ Ultimately, he proposes an eco-spirituality that recognizes the uniqueness of human beings while locating them firmly within the larger story of a sacred cosmos.⁵⁹

The recognition of the common root of the oppressions of peoples and the degradation of the rest of nature in the human will to power as domination is important for addressing the dual issue of oppression and ecological destruction. Yet, just as important is to call to mind that the desecralization of the earth and the dehumanization of human beings make it possible to justify the exercise of this will to power as domination. As Pieris points out, the very Christian faith that gives birth to Third World liberation can also be that from which peoples need liberation, an idea not totally lost on Boff as he explicates views about the natural world that are found in these faith traditions that contribute to the problem.⁶⁰

III. A Liberationist Religion and Science Dialogue?

Interestingly, each thinker has a unique approach to science in theology. For his part, Gutiérrez notes that engaging in the religion and science discourse can pose a distraction from the immediate need to address the more pressing life and death

⁵⁸ Ibid., 41-43; Boff, *Cry of the Earth, Cry of the Poor*, 21.

⁵⁹ Boff, *Cry of the Earth, Cry of the Poor*, 187-202.

⁶⁰ Ibid., 63-85.

reality of the poor. Pieris focuses more on technology and notes its destructive impact on cosmic religions while seeing its liberating potential when guided by metacosmic religion. Finally, Boff sees the impact of particular scientific worldviews, that is modern versus contemporary, on the spirituality that guides the way of being and acting in the world of human beings. And it warrants explicitly stating that an engagement in the religion and science discourse on a purely theoretical and intellectual level without a view to the political, economic, cultural and ecological impact of science and technology can prove to be a mere distraction in those places where, as Gutiérrez understood them, social injustice poses the challenge to religious faith.

While the relationship between religion and science is not the primary concern of Third World liberation theologians like Gutiérrez, Pieris, and Boff, these theologians acknowledge the impact of a scientific worldview on the conditions of the world's poor. In their distinct ways, each acknowledges the potential if not actual positive contribution of a scientific worldview. Gutiérrez draws attention to the capacity of science to provide the necessary knowledge to understand more fully a given situation by bringing to light causal relations. In so doing, he also draws attention to the agency of human beings in the world. Pieris sees the development of technology as of one piece with the evolutionary process towards the noosphere as articulated by Teilhard de Chardin, bringing to light the potential role of technology in the process of liberation and inculturation, if guided by metacosmic religion. For Boff, knowledge of contemporary evolutionary cosmology can lead to the needed spiritual shift away from an anthropocentric and thus utilitarian understanding of nature to a relational worldview that recognizes the innate value and subjectivity of non-human nature. Overcoming anthropocentrism and the will to power as domination through a discovery of humanity's interdependent relationship with all of the cosmos can lead to an attitude towards the poor and non-human nature that results in liberating and life-affirming actions.

These theologians affirm the capacity of science and technology to provide a sense of empowerment and agency. Gutiérrez reminds readers that it is science and scientific thinking that provides the foundation for doing a theology of liberation. It is the ability to observe and systematically name and address the root causes of concrete situations of poverty that make it possible to name these as injustices and manifestations of sins. The social scientific analysis of such situations is a critical dimension of the method of Third World liberation theology. For his part, Boff, while critical of modern science, recommends contemporary science as an important remedy to the objectification of non-human nature that has facilitated its destruction. If modern science contributed to the justification of the human attitude of lordship over much of the natural world, then contemporary science can lead to a retrieval of a more modest understanding of the place of human beings as late comers in a

long and vast cosmic story. He believes that if we can get beyond the mechanistic view of modern science and come to know the world that contemporary science is discovering, then we can begin to recognize our profound interconnectedness with our earth and the cosmos and learn to live as children of the earth. Within this evolutionary cosmic story, Pieris reads human technology as an advance that can further the process of hominization toward humanization.

Nevertheless, each one of these liberation theologians is also critically aware of the destructive power of science and technology as these are found and employed in the world today. Science and technology become another place of marginalization for the world's poor. They have been and are utilized as weapons in the process of colonization and the suppression of peoples and their way of life, particularly of their indigenous religions, which has led to the destruction of non-human nature, the poor and indigenous cultures. The established scientific worldview that is found in the developed North has contributed profoundly to the exercise of the will to power as domination.

It would be a mistake to read the negative assessments of science and technology that these liberationists present as evidence of an anti-science and anti-technology attitude. The negative impacts of science and technology have been in part due to the secularization that has been introduced with science. For their part, they claim that it is only from within a religious perspective that the positive potentials of science can be reached. With the forgetfulness of the deeper dimension that permeates the cosmos and gives meaning to human existence comes the very peril that so many Filipinos connect to science and technology. If science and technology are simply used as instruments of economic liberation without regard for the total liberation of persons, history has already shown that they easily become instruments of oppression. But if liberation is integral liberation, the liberation of the whole person, especially from the reality of sin, then science and technology cannot succeed apart from religious faith. Science and technology, as Pieris insists, must be guided by religion. As Gutiérrez reminds us, liberation can come only by the power of Christ, through God's spirit acting in the world. Boff believes that once we rediscover the spirit, the sacred in the world—yes, with the help of science—then knowledge of the world can truly liberate from the attitudes of modernity, attitudes that Pieris identifies as binding many to the culture of consumerism and materialism and condemns many more to poverty and leads to the destruction of the earth.

IV. Conclusion

The critical assessment of science provided by these liberation theologians speak to the prevailing concerns discerned in Philippine culture about the potential

and actual utilization of science and technology to further the dominating power that perpetuates the situation of poverty and oppression of the poor. Gutiérrez, Pieris, and Boff, while acknowledging the possible dangers of science and technology for religion and a liberation theology, also present the ways in which a scientific worldview with its technological consequences can contribute to the work of liberation from oppressive poverty and dominating power. The suggestion that a liberating spirituality grounded in a metacosmic religion lived out among the poor as a guide for determining the role of science and technology can be gleaned from their theologies. The power and agency that comes from knowledge gained through science can be exercised in a manner suggested by a metacosmic religion.

To put it in the specific context of the Philippines, the approach suggests that how science and technology are engaged should be rooted in the culture's deep religiosity and people's profound faith commitment. Rather than posing a threat to religion, science and technology can be pursued in a manner guided by the understanding of the person, non-human nature, and the relationship of these that follows from a metacosmic religious vision. Then, the power and agency that come with the knowledge gained through science, whether natural science or social science, can facilitate overcoming the sense of powerlessness that often comes with the experience of poverty and marginalization and inspire the work for liberation not just from economic, cultural and political oppressions but for human self-actualization or, in Pieris' words, "humanization."

At the same time, a contemporary scientific understanding of the natural world can deepen the religious sensibility of the people by bringing to light the profound interconnected and interdependent nature of the world. A sense of cosmic brotherhood and sisterhood can inform the understanding of creation, the human being's vocation within God's creation, and the meaning of salvation in this ecological vision. The spiritual and theological conversion inspired by an evolutionary cosmological worldview can in turn shape the attitude towards the natural world that shapes how and why science is done.

What is being suggested here is not just an ethical approach to science. It is also anthropology, an understanding of human beings and their relationship to the world and to God as participants in the unfolding of God's creation. Such a vision of the human person plays a role in determining what science should be pursued and what technology can be embraced. Science can and should shape one's theology and, consequently, shape the concrete ethical responses called for by this theology.

Bacon's idea of science as source of knowledge and a source of power can be positively construed if it is understood from within a religious worldview. At the same

time, this religious worldview must be informed by a contemporary understanding of humanity that, while acknowledging the uniqueness of the human being, situates the human being within the cosmic community, particularly within the earth community. In this schema, science is allowed to inform religious understanding, to temper triumphalism and reclaim a humility that has always been a part of the Christian tradition. It allows for a Christian understanding of the human person that empowers people to be actors in history while remembering their status as creature who co-exists with other creatures on the earth and do not have ownership of the earth and its non-human inhabitants. It is the task of theologians in such a context to undertake a theology of science, that is, an exploration of the meaning of science, of the human capacity to know the world and to use that knowledge, and the implication of this knowledge from the optic of religious faith. It means understanding science from the perspective of the fundamental vocation of human beings as self-reflective co-creators of God's world. And as John Paul II stated in his 1988 address to the Pontifical Academy of Science, "Science can purify religion from error and superstition. Religion can purify science from idolatry and false absolutes."⁶¹ When this dialectical relationship is accomplished the work for integral human liberation can be furthered because it is grounded in both a deepened and critical faith as well as an empowered and empowering knowledge of self, the human community, and non-human nature. ■



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⁶¹ John Paul II, "To The Reverend George V. Coyne, SJ, Directory of the Vatican Observatory," June 1, 1988 in Pontifical Academy of Sciences, *Papal Addresses to the Pontifical Academy of Sciences 1917-2002 and The Pontifical Academy of Social Sciences 1994-2002* (Vatican City, 2003) 300. URL: http://www.vatican.va/roman_curia/pontifical_academies/acdsdien/documents/newpdf/sv100.pdf. Accessed 10 June 2011.