East Asian Voices on Science and the Humanities

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MAPPING ONE WORLD: RELIGION AND SCIENCE FROM AN EAST ASIAN PERSPECTIVE

by Shin Jaeshik

Abstract. This article aims to delineate a model of religion-science relationship from an East Asian perspective. The East Asian way of thinking is depicted as nondualistic, relational, and inclusive. From this point of view, most current Western discourses on the religion-science relationship, including the interconnected models of Pannenberg and Haught, are hierarchical, intellectually centered, and have dualistic tendencies. Taking religion and science as mapping activities, "a multi-map model" presents nonhierarchical, historical, social,

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multidimensional, communal, and intimate dimensions of the religion-science relationship.

Keywords: East Asia; John Haught; multi-maps model; Wolfhart Pannenberg; religion; science

Why an East Asian Perspective?

Following the scientific revolution, science has continuously increased its influence beyond its traditional boundaries, and become the criterion in the pursuit of knowledge and the "priest" in assessing value. During the last three centuries, Christianity, the dominant religion in the West, has tried to secure its territory from the scientific invasion by proclaiming a differentiation of religion and science as two divided realms.

Based on the differentiation of two realms, some Christian theologians, such as John Haught (1995, 9–26) and Ted Peters (1999, 11–22), attempt to present models of the religion-science relationship. Ian Barbour's (1990) classification might be the most famous and widely cited among such proposed models. He presents four categories: conflict (religion and science are in opposition with just one of them being valid), independence (religion and science are different endeavors), dialogue (religion and science are related through similar questions and methodology), and integration (religion and science are assimilated to the extent that the study of nature reveals evidence of God or scientific developments can lead to the reformulation of a religious belief system).

These proposed typologies recognize the complex relationships between religion and science, and emphasize their close interactions in Western history. However, the current geography of religion-science discourses remains something unfamiliar or even strange from an East Asian perspective. Must we accept these Western discussions of the religion-science issue as a universal discourse? Might it be possible to explore an alternative approach to the relationship of religion and science? The writer holds that an East Asian approach, a "multi-map" model, might present a meaningful alternative for depicting a comprehensive picture of the religion-science relationship.

When we explore the religion-science issue from an East Asian approach, three aspects need to be mentioned. First of all, the East Asian nondualistic way of thinking is different from that of the West, and thus we perceive the religion-science issue differently. Second, East Asians have a different historical experience of religion and science. The Chinese terms 宗教 (religion) and "科學 (science) are new to East Asians because they were coined and introduced during the second half of the nineteenth century in the process of the translation of Western literature. Third, for East Asians "actual practice" is more important than "theoretical knowledge." We might say that we believe truth is realized not through orthodoxy

but through orthopraxis. This tendency suggests that the issue of religion and science transcends the intellectual dimension, embracing practical and communal dimensions.

Building on these three aspects, this essay pursues a model for the relationship between religion and science from a Korean theologian's viewpoint. As a Korean theologian who has lived under the influence of East Asian traditions, the writer approaches the religion-science relationship from an East Asian perspective, or the so-called *Yin-Yang* way of thinking. For East Asians, religion and science are not isolated realities or realms, but rather closely connected or integrated occasions that reflect different aspects of a single world. The religion-science relationship may be reconstructed within the pattern of the *Yin-Yang* relation.

This essay consists of three main sections to achieve this goal. First of all, the East Asian worldview and way of thinking will be briefly presented as a preliminary and theoretical framework for understanding the writer's model. Traditionally in East Asia, the world is regarded as a ceaselessly changing reality, in which everything is connected and interrelated. For a proper understanding of the dynamically changing world, we need a comprehensive point of view capable of representing simultaneously and holistically the various aspects of the world in flux.

Next, we will examine two theological views on the relationship between religion and science, those of Wolfhart Pannenberg and John Haught. Both propose their own integrated models of the religion-science relationship, which emphasize the close connection of religion (theology) and science, respectively. Pannenberg presents the theology-science relationship in a horizontal dimension, whereas Haught opts for a vertical structure.

Finally, using the metaphor of mapping, the writer will propose a "multi-map" model for thinking about the religion-science relationship. As two different maps, religion and science offer different narratives that have been constructed during human history for survival and prosperity within the single dynamic world. Here the terms "religion" and "science" are understood as provisional names to designate two special kinds of human activities. This model suggests that the relationship between religion and science is neither horizontal nor vertical, but complementary and overlapping.

The East Asian Worldview and Way of Thinking

Now we will examine some features of the East Asian worldview and way of thinking, which plays a theoretical role and works as a framework in constructing an alternative view of the religion-science relationship, which is the "multi-map" model. The following question will be raised in dealing with the religion-science relationship: Is it possible to refer to an East Asian worldview and way of thinking? The response might be very positive, as

the East Asian way of thinking is different from that of the West. Even though all human beings may be born with the same brain structure, they do not see or think in the same way. At the risk of oversimplification, East Asians tend to think more holistically and Westerners tend to think more analytically.

Over the past twenty years, many researchers have observed consistently different patterns of perceiving and thinking in different societies. Evidence for cultural differences in thinking between East Asians and Westerners has accumulated in recent years (i.e., Nisbett et al. 2001; Nisbett 2003; Varnum et al. 2010). This research presents the different ways of thinking between East Asians, who share the philosophical tradition of Confucianism, and Westerners, who share the philosophical tradition of the Greeks. The former tend to use holistic, cyclical, and dynamic ways of thinking, whereas the latter are more likely to use analytical, linear, and static ways of thinking (Nisbett et al. 2001).

The writer expects that the East Asian way of thinking might provide profound insight for understanding the science-religion relationship. Then, what are the characteristics of the East Asian worldview? It may generally be characterized as more cosmological than anthropological, more holistic than analytical, more correlative than causal, and more polaristic than dualistic. In the East Asian worldview, the universe is an organic whole in which all of the parts of the entire cosmos belong to one organic whole. Everything in the world is a part of a single world, and is merging and interacting with everything else without regard for mathematically or mechanically demonstrable cause and effect. The world is seen as spontaneously self-generating, self-renewing, and self-sustaining without any creator or agency (Tu 1989).

Therefore, certain key terms, such as "change" (*I*, "Way," *Dao* 道), "virtues" (*De* 德), "psychophysical stuff" (*Qi* 氣), *Yin-Yang* (陰陽), and "five phases of wood, fire, earth, metal, and water" (*Wu-Xing* 五行), are used for delineating some dynamic aspects of the world. None of these terms can be understood or interpreted in isolation; rather, these ideas are intrinsically dependent on each other for their constitutive elements. Thus, the approach to the understanding of the East Asian view of reality must also be an organic or relational one rather than an individualistic or analytical one. For instance, the proper understanding of *Dao* is not possible without the knowledge of *De*, *Qi*, and *Yin-Yang*; *Dao* is to be explained and interpreted appropriately in and through the ideas of *De*, *Qi*, and *Yin-Yang*, and vice versa.

The general characteristics of the East Asian understanding of reality can be categorized into two concepts: "cosmoanthropology" and world as a dynamic whole. On the one hand, "cosmoanthropology" describes the correlation between nature and world. The inseparable relationality between the cosmos (nature or the world) and humanity is a distinctive

characteristic of the East Asia worldview. This correlative insight between nature and human beings is rooted in the East Asian view of reality; everything in the world is derived from an undivided cosmological reality (*Dao*) and is a part of an unbroken ontological continuity. *Dao* is understood to be all-pervading and all-embracing throughout the processes of the world, and all things in the world are consanguineous in their nature. *Qi* is the name of the basic psychophysical stuff that constitutes all things and phenomena in the world. All things in the world are correlated and consanguineous, and their natures are homologous. Because of this understanding of *Dao* and *Qi*, in the East Asian tradition there is no dichotomy of spirit and matter or distinction between the "human" and "nonhuman" worlds. The process of change is constituted by the interchange of the two forces of *Qi*: *Yin-Qi* and *Yang-Qi*. Everything gives rise to change or transformation in terms of *Yin-Yang* polarities and, hence, forms a dynamic whole with the *Yin-Yang* process of *Dao*. In this regard, for East Asians, the primary category by which to understand the world is not "substance," "essence," or "being," but "relationship," "transformation," or "movement."

On the other hand, the East Asian worldview presents a holistic outlook not only on nature and human beings, but also on the dynamic relationships of all things in the process of transformation. To use the term "dynamic" is to accentuate the importance of movement and creativity, not only as a universal process of all things in the world, but as the source or origin of all things. This idea of the dynamic unity of the cosmological and the ontological is well expressed in the notion of the *Dao-De* relationship. The inseparable relationship between *Dao*, the ultimate reality, and *De*, the manifested particularity, implies that everything goes beyond itself, identifying with the ultimate reality without denying its reality or uniqueness. However, there is no ontological difference between the terms in the relationality. Because all of the particular modalities of things are organically connected in this way, nothing has existence on its own apart from this interrelatedness. Thus, all things in the world should be viewed with regard to all possible relationships with all other possible things. Because of the spontaneously self-generating process of transformation, every possible level and every available dimension should be applied to each particular thing. Therefore, in the East Asian worldview, everything in the world possesses an open possibility.

The East Asian Nondualistic Way of Thinking: Yin-Yang

The East Asian way of thinking has been called variously the "*Yin-Yang* way of thinking" (Lee 1971; Lee 1995, 363–70), "correlative thinking" (Hall and Ames 1995, 138–39), "orientative thinking" (Allinson 1989, 12), and so on. In spite of these different terms, they all reflect the characteristics of the East Asian worldview; dynamic, holistic, relational, inclusive, and

so forth. It is generally conceived that the mode of East Asian thinking is not dualistic or "either/or," but correlational or "both/and." East Asian logic, in particular, is not a logic of negation, but a logic of coexistence or a logic of polarity. The basic mode of East Asian thinking is to preserve and present the totality of the experience of reality, which includes intuition, feeling, and the process of reasoning, in a comprehensive system of symbols, language, and activity. Here the writer adopts the term the "*Yin-Yang* way of thinking" to refer to the traditional East Asian way of thinking because this thinking originates from the *Yin-Yang* symbolic system. For a proper understanding of the *Yin-Yang* way of thinking, therefore, it is necessary to comprehend the *Yin-Yang* relationship.

The *Yin-Yang* symbolism is generally believed to be the basic principle of the world. The literal meaning of *Yin* and *Yang* is "the shady side of a hill" and "the sunny side of a hill" (Grenet 1963, 87–88). The meaning of *Yin* and *Yang*, which was confined to light and shade at first, was gradually linked and merged with other existential experiences of the world; that is, *Yang* moves upward and *Yin* downward, *Yang* is linked to motion and firmness, whereas *Yin* is linked to rest and softness. *Yang* is the essence of heaven, and *Yin* is that of earth. *Yang* signifies the sun, the south, light, day, fire, red, dryness, heat, spring-summer, and so forth, whereas *Yin* signifies the moon, the north, darkness, night, water, black, cold, moistness, autumn-winter, and so on. *Yang* denotes the masculine principle, positivity, activity, motion, and life, and *Yin* represents the feminine principle, negativity, quiescence, rest, and death.

The nature of all things captured in the categories of *Yin-Yang* expresses the mutuality, interdependence, diversity, and creative efficacy of the dynamic relationships that are deemed immanent in and ascribe value to the world. *Yin* and *Yang* are therefore cosmic principles that represent all things. Therefore, the structure of the *Yin-Yang* relation implies nondualistic polaristic, correlational, and inclusive dimensions whose implications could be drawn as follows (cf. Shin 1997, 145–51):

(1) First of all, the *Yin-Yang* relation is not dualistic but polaristic because *Yin* and *Yang* are not different substances or entities. *Yin* and *Yang* differ in "degree" rather than in "kind," and *Yin-Yang* activity represents a qualitative alternation. Although *Yin* and *Yang* are symbols appearing in various images that may be visualized and identified as entities and beings, they are essentially nonsubstantive. *Yin* and *Yang* are existentially opposite but essentially united. They are relational symbols of dynamic transformation or change. *Yin* does not transcend *Yang*, nor vice versa; rather *Yin* entails *Yang*, and *Yang* entails *Yin*. That is, the *Yin-Yang* relationship is not a conflicting duality but rather a complementary polarity. "Polarity" indicates a relationship of two "poles," each of which requires the

other as a necessary condition for being what it is. Each "pole" can be explained by reference to the other. Because opposites are united together in the *Yin-Yang* relationship, the elimination of one "pole" results in the elimination of reality itself.

(2) Second, the *Yin-Yang* relation is correlational because *Yin* and *Yang* are primarily defined by their relationship. As relational categories rather than substantive entities, *Yin* and *Yang* are poles of a correlative pairing, which are pragmatically useful in sorting out "this" and "that." However, they are not, as is often claimed, dualistic principles where two elements exclude each other. Rather, *Yin* and *Yang* are, first and foremost, a vocabulary of qualitative contrasts, which are applicable to specific situations and which enable one to make specific distinctions. What makes *Yin* and *Yang* is not entities but intensities. What is central to the polar relationship of *Yin-Yang* is not being or substance but change or transformation. In other words, transformation or change is *a priori* to being in the *Yin-Yang* relationship. It is not the being that changes *Yin* to *Yang* or *Yang* to *Yin*. It is the change itself that makes it *Yin* and *Yang*. The *Yin-Yang* way of thinking reverses the Western ontological assumption that change is a function of being. Again, the "essence" of the *Yin-Yang* relationship is dynamic transformation or change, rather than unchanging entity or substance.

(3) Finally, the *Yin-Yang* relation is inclusive. *Yin* and *Yang* embrace each other to symbolize ultimate reality, not only as it includes opposites but also as it transcends them. *Yin* is not only *Yin* but also *Yang* and *Yang* is not only *Yang* but *Yin* as well. *Yin* is always "becoming *Yang*" and *Yang* is always "becoming *Yin*." However, this inclusiveness of the *Yin-Yang* relationship does not means that *Yin* and *Yang* dominate or transcend each other. Because *Yin* and *Yang* differ in "degree" rather than in "kind," the *Yin-Yang* activity is a qualitative alternation. *Yin* and *Yang* operate within the limits of minimum and maximum degrees. Both are active within the given limit of their potentialities. When *Yang* expands to its maximum, it begins to contract because *Yin* begins to expand. When *Yin* expands to its maximum, it begins to contract because *Yang* begins to expand. This process of alternation between the opposites limits the range of activity of *Yin* and *Yang*: neither *Yin* nor *Yang* can expand forever.

The East Asian way of thinking, or so-called *Yin-Yang* way of thinking, is consonant with this *Yin-Yang* relation, and thus implies the characteristics of its relationality. The basic motif of the East Asian way of thinking may be characterized as the negation of the dualistic way of thinking. The

polar explanation of the *Yin-Yang* relationship gives rise to a holographic interpretation of the world, characterized by interconnectedness, interdependence, openness, mutuality, indeterminateness, complementarity, correlativity, and coextensiveness. Here the characteristics of the *Yin-Yang* way of thinking are presented in three dimensions: correlative thinking, both/and thinking, and event thinking. They may be described further as follows (cf. Shin 1997, 151–64):

(1) First of all, the nondualistic way of thinking is depicted as a "correlative" thinking, which is a nonlogical procedure in the sense that it is not based upon natural kinds, part-whole relations, an implicit or explicit theory of types, or causal implications or entailments of anything like the sort one finds in Aristotelian or modern Western logic. Causal language is the discourse of substances, whereas correlative language characterizes processes. Logical order in relation to causal thinking is disclosed by pattern regularity indifferent to the actual content of the particulars constituting the order, whereas aesthetic order linked with the *Yin-Yang* way of thinking discloses an ad hoc unity formed by irreplaceable items.

(2) Second, the *Yin-Yang* way of thinking is characterized in terms of "both/and" because of its inclusiveness and relatedness. This way of thinking, which considers and includes contradiction and opposites at the same time, cannot be categorized in terms of an either/or, that is, an exclusive or absolute way of thinking. Because either/or thinking presupposes a dualism that excludes one from the other, it is inadequate for expressing the complementary polarity of the *Yin-Yang* relationship.

The either/or pattern is predominant in the Western way of thinking and closely linked to Aristotelian logic. Western logic is essentially based on the law of identity. The rules of "contradiction" and the "excluded middle" are simply corollaries of the law of identity. The *Yin-Yang* relationship, however, does not exclude the middle because the middle is the most inclusive way of representing the whole. The either/or way of thinking, in which everything should be either "A" or "B," splits the opposites as if they have nothing to do with each other, but the both/and way of thinking recognizes not only the coexistence of opposites, but also their complementarity. From the perspective of the *Yin-Yang* way of thinking, a reality is both "A" and "—A." In this respect, the *Yin-Yang* way of thinking or the both/and way of thinking are holistic.

(3) Finally, the *Yin-Yang* way of thinking alters the basis of the way of thinking from an "ontological" to a "changeological" assumption. In the *Yin-Yang* way of thinking, "being," the essence of the

> traditional Western idea of reality, is reversed by "change," and "ontology" is replaced by "changeology." According to "changeology," being is nothing other than the illusion of change. Unchanging being cannot exist in reality; it can exist only in speculation and memory. The two types of thinking between the East and the West differ not only in their categories and their basic rule of logic, but also in their attitudes. The East Asian mentality does not emphasis the "what" but rather the "how." In other words, the Western way of thinking uses the "what" to embody and absorb the "how." The "how" is to be determined by the "what." This way of thinking might be referred as "substantive thinking."

The *Yin-Yang* way of thinking puts its primary concern on "how" rather than "what." Instead of taking for granted that the world is composed of the substantial object of sense experience or of substances that underlie them, East Asians see the world as the totality of events and things in transformation. What is to be explained, then, is why things happen as they do. The explanation will consist in the relations of synchronicity among events and the component occurrences that make up the larger ones. That is, an entity or a thing is a mode of relating. Thus, in the *Yin-Yang* way of thinking, substance is not a dependent entity, but a by-product of "relations."

Models of Religion-Science Relations in Pannenberg and Haught

From the *Yin-Yang* way of thinking, religion and science could not be considered as two separate realities but as two closely related aspects of one reality. Current typological approaches to the religion-science relationship in the West are not familiar with this East Asian perspective. However, some discussions of the intimate relationship that exists between religion and science are worth examining in order to comprehend the continuity and discontinuity between East and the West discourses on religion and science.

Among Western attempts that emphasize interconnections between religion and science, the approaches of Wolfhart Pannenberg and John Haught may be considered representative. Criticizing the "struggle thesis" of the religion-science relationship, each offers an insightful discussion on the close relationship between religion and science. As a Protestant theologian in Germany, Pannenberg describes the relationship between theology and science in terms of width or scope. As a Catholic theologian in the United States, Haught explains the relationship in terms of depth. The writer thinks both approaches to the theology-science relationship might be referred to as a "one reality-two versions" view.

Wolfhart Pannenberg: Theology and science, two versions of one contingent world. Pannenberg was one of the most significant Protestant theologians of the twentieth century. He may also deserve to be called a pioneer in the theology-science discussion within contemporary academic circles. When he published *Theology and the Philosophy of Science* in German in 1973, there was no field of study called "religion and science." In relation to the issue of religion and science, his central significant contribution lies in his understanding of the nature of theology and the nature of truth to which theology is related (Clayton 2003, 237–40).

Pannenberg defines theology as "the study of the totality of the real from the point of view of the reality which ultimately determines it both as a whole and its parts" (Pannenberg 1976, 303). It is the goal of theology, thus, to make credible statements about the nature of reality as a whole and its relationship to God. For him, theology should be a public discipline related to the quest for universal truth and a rational discipline in the university. He became convinced that a fundamental rethinking of the relationship between theology and science was necessary (Pannenberg 1976, 1993, 1997, 2001).

For Pannenberg, the topics of theology and science are not separate because both deal with the same object. However, it is evident for him that theology and science are distinct disciplines, with their own understandings of how information is gathered and assessed. Nevertheless, he criticized the generally accepted view of theology and science as a contrast of "why" and "how" questions. That is, theology focuses on the contingency of occurrences that are experienced as the work of almighty God, whereas science is mainly concerned with the regular aspects of nature. What is, then, his contribution to the discourse on the religion/theology and science relationship?

In order to comprehend Pannenberg's view, it is necessary to examine his concept of God the Creator with which his theological program starts. According to Pannenberg, God the Creator as an all-determining reality constructs a field from which all existing realities come. Hence, all natural and historical contingencies originate in God. When God is understood as the all-determining reality, it is not possible to understand fully or even appropriately the processes of nature without reference to that God (Pannenberg 1993, 38). If theology deals with God, it necessarily considers God as the power that determines not only human history but also nature, which is the object of the scientific research. Thus, the relationship between theology and science is not contradictory or exclusive, but rather consonant or related.

In spite of his accent on the consonant relationship, however, Pannenberg does not grant theology and science equal value for understanding the world. He places science within his larger theological enterprise. For him, theology is larger than science. Then, what constitutes his value distinction

between theology and science? The answer is the scope of theology versus the scope of science (cf. Albright and Haugen 1999, 7).

The object, which science objectively explains, is part of reality. Science is a knowledge system that aims to explain things that may only be described according to general laws drawn from the relationship of parts. Science thus aims to speak of the parts of reality only in terms of their relationship to each other and only insofar as they are subject to a description by general laws. On the contrary, theology is a knowledge system that tries to explain contingence and laws from the most comprehensive context possible. It is interested in the concrete and contingent characteristics among the parts of reality. Theology aims to speak also of the particular and contingent features of the parts of reality and to comprehend both their contingent and law-like features within the widest possible context of explanation, namely, in terms of their relationship to reality as a whole and to the reality of God as that power which constitutes the whole of reality as a whole.

In other words, a theological perspective looks at the reality of the world as the result and expression of divine action, a unique and irreversible process of history. On the contrary, science understands the reality of the world as a natural phenomenon, as concerns its regularity, and describes it in the form of mathematics. In this formation, theology is related to the totality of reality, whereas science attempts to describe the general and lawful features of reality. Pannenberg believes that the explanations for such laws offered by scientists have a purely provisional status, until they are placed on a prior theoretical foundation through theological analysis.

It is this difference in the *scope* of reality considered by the scientific and theological versions of reality that lies behind Pannenberg's claim that scientific descriptions of reality must be accepted as "simply a provisional version of objective reality," which needs to be "expanded and deepened" by theological explanation. Therefore, for him, the difference between science and theology derives not so much from *which aspect of reality* they choose to deal with, but from *how much of reality* they choose or at least attempt to deal with (Pannenberg 1976, 124, 221–24).

Pannenberg holds that theology and science offer different kinds of explanations, with the former being a more valuable version than the latter. Because theology provides a more comprehensive and complete view of reality, which science could not provide by deepening and expanding the scientific view, theology is more essential for understanding the picture of reality. Pannenberg's theology-religion relationship focuses on the "scope" of different versions.

For the writer, Pannenberg's view of the theology-science relationship seems to be a kind of contemporary version of the motto, "Theology the Queen of the Sciences." After the emergence of modern science, theology has tried to continue its superiority over other disciplines, insisting that theology deals with the issue of "salvation," which is the most important

issue of all human concerns. Pannenberg, suggesting the comprehensiveness of theology's scope, tries to encompass all academic disciplines within its realm. With this view of the theology-science relationship, Pannenberg dissolves the differentiation between the realms of meaning and fact.

John Haught: Religion and science, two textual readings of one nature. John F. Haught, a Roman Catholic theologian in the United States, has concentrated on issues in religion and science for more than thirty years (Haught 1995, 2000, 2001, 2004, 2007, 2010). He specializes in theology and evolutionary science, and pursues an evolutionary theology under the influence of Whiteheadian process thought and Pierre Teilhard de Chardin. He has spent much of his career interpreting the place of Darwin's evolutionary theories for Christianity. The key concept of his academic enterprise is "evolutionary theism," which differs from the overly transcendent God of classical theism.

Haught's evolutionary theism is the basis of his theological framework and his view of the relationship between religion and science. He claims that evolutionary theism locates ultimate explanation in the distant depths, dodging in principle any temptation to confuse the work of God with the work of nature. His evolutionary theism accepts Darwinian explanations of biological life. However, evolutionary theism adamantly holds that an appeal to divine intelligence is required to fully understand life and reality (Haught 2004, 91).

In his theological program for religion and science, Haught applies the analogy of textual reading to his model of the religion-science relationship. For him, the universe is in some sense comparable to a written text whose intelligibility cannot emerge until we have learned how to read it. Both religion and science may then be seen as distinct ways of "reading the universe." In other words, religion and science are two different levels of reading a "book," the universe.

By means of this reading analogy, he seeks to criticize two kinds of literalism, religious literalism (or biblical fundamentalism), and scientific literalism (or evolutionary materialism). According to Haught, both kinds of literalists insist on reading the text or the universe only on one level. They agree that everything should be read at a plain or literal level of understanding. Haught argues that if we persist in our literalism, we are not able to find any meaning written in the cosmos. He sees evolutionary materialism as a kind of "cosmic literalism" stuck on the surface of nature, satisfied with groundless claims that there is nothing beneath the "fundamental" laws of physics and natural selection. Just as "biblical literalism" remains content with a narrow reading of scripture, the modern decision to understand the universe and the evolution of life as "merely material" is essentially a literalist flight from the depths of nature.

Criticizing the reductive tendency of both literalist readings, then, Haught suggests that an appreciation of the hierarchy of distinct reading levels may open up fresh ways of thinking about the religion-science relationship. The book analogy may allow for a view of religion and Darwinism as different "reading levels," rather than as incompatibilities. It will also lead to distinct understandings of truth, so that we need not dispense with the idea that religion may give us access to a kind of truth science cannot reach. Therefore, Haught proposes that we might move beyond seeming conflicts only when we learn to distinguish carefully among possible reading levels. Then, how do those different levels of textual reading exist together?

Haught uses Herman Melville's novel *Moby Dick* to picture the proper relationship between religion and science. According to him, different readers, such as a dog, a monkey, a 5-year-child, and a young adult, might comprehend *Moby Dick* differently. Below are his explanations (Haught 2004, 14).

When the book is lying open on the floor, a dog comes along and pokes its nose into it, excited by the book's peculiar odors. Because the dog lives in a world of smells, dog-awareness has clearly left something out as far as the book's content is concerned. A monkey opens up the same book and will read the novel as a set of white pages dappled with small black marks. The monkey is not wrong to apprehend the novel at this elementary level, but the book may have more to it than this. Next a 5-year-old child, having recently learned her/his ABCs, looks into *Moby Dick* and observes that the book is a treasury of letters of the alphabet, a content missed by both the dog and monkey. Again, the child's reading is quite accurate, yet the deep levels of meaning still remain buried in the book. For a 14-year-old boy who writes a book report, it seemed to be a very long and tedious adventure story. He might grasp the narrative outline but miss all of the artistry, pathos, and wisdom beneath the narrative's surface. The boy is not wrong to read the novel at the level of sheer storytelling, but having spent some time with Melville's book later in his life, he might realize how much of its substance his earlier readings had left out.

Then, there might be another issue of how the different levels of reading could not be competing but complementary. The concept of the "hierarchy of explanations" is used as an answer for this problem. For explaining the "hierarchy of explanations," Haught presents an analogy of a moving car as a simple example. Suppose someone is driving your car down the street. "Why is my car moving?" At one level of explanation a good answer is "because the wheels are turning." At another level an equally acceptable explanation is that internal combustion has set the pistons, drive shaft, and so forth, in motion. At still another level the answer may be "because Jay is driving it." And at another level the explanation might be "because Jay wants to go to the school" (Haught 2001, 57).

All of these explanations make sense at their own level. Moreover, all can coexist without contradicting or competing with one another. Taken together they constitute a richer explanation than any provides by itself. For Haught, life in the universe also lends itself to such a hierarchy of explanations. In the case of the moving car, the fact that Jay wants to go to the school is a "higher" level explanation, but it does not contradict or compete with the other levels of explanation.

Then, we face questions such as "what is the difference between religious reading and scientific reading?" and "which level is more authentic reading?" Haught does not agree with some biologists who insist that the scientific explanation is the ultimate explanation. It may be that science itself cannot read in depth the full content of nature's book. Religion has previously read the cosmos from the perspective of qualitative meaning, whereas science uses a quantitative reading. Under the scientific reading, the narrative texture of nature still lies largely unacknowledged. He believes that the theological reading level reveals deeper aspects of nature and life, which science could not explain. Rather theology claims that the *ultimate* explanation of evolution is divine creativity.

Haught proposes his view on the religion-science relationship with an analogy to textual readings and the concept of a "hierarchy of explanation," which have a vertical structure. As two different explanations of the same object—the cosmos—religion and science are not competing or contradicting with each other. Nevertheless, because he is convinced that religion provides the more valuable interpretation from a deeper level reading than science, his hierarchical structure between religion and science still follows the religion-centered approach.

Impressions of current Western discourses on religion and science. Even though Pannenberg and Haught maintain slightly different features and emphases in their respective models, such as scope/width and level/depth, they share a common vision of the religion-science relationship as interconnected rather than being separated. Now the writer will try to describe some impressions or/and characteristics, which can be found in current Western discourses on the issue of religion and science, including those of Pannenberg and Haught.

First of all, the various models that have been proposed usually use categories for analyzing a variety of interactions between religion and science in Western history. In light of "the complexity thesis," most typologies found in the suggested models consist of abstracted ideal categories (cf. Brooke 1991). However, proposing typologies is always a rather arbitrary business, and might well be grouped differently. Typological categories tend to be seen as representing some unchanging reality like a fixed *idea*, rather than as provisional concepts in which the boundaries are loose and flexible. When such categories are idealized, then they would inherently have the problems

of oversimplification and generalization. Such a tendency is intimately related to the premise that religion and science are two separated realms, areas, or realities. When they are looked upon as two different realities, the discourse on the relationship tends to put its focus on a bottom-up approach; that is, beginning with two different fixed entities—religion and science—and moving on to their relationship. But is it proper to approach religion and science as two different realities?

Second, most Western discourses on the religion-science relationship are rooted in "a book metaphor"; that is, the so-called "two books theory" that God made two books, the Book of Bible and the Book of Nature. "Reading" or "interpreting" the books, therefore, is seen as the key activity in doing religion and doing science. However, the book metaphor usually implies a "finished and completed nature," and thus it could not properly connote a "dynamic and changing nature." As a result, current discourses seem to be more concerned about the passive human in relation to the given books, rather than about subjective human activities within the process of an evolving world. In addition, when religion and science are regarded as "reading" or "interpreting" enterprises, they could not adequately reflect some multilevel, multicultural, and multicontextual dimensions of religion and science, the dynamic enterprises in history and culture.

Third, the suggested models focus on the intellectual, epistemological, or theoretical realms, rather than reflecting the whole activities of the religious or the scientific enterprise. Besides the dimensions of knowledge, religion and science, respectively, include various aspects such as ritual, community, and so on. Proposed models might only partially cover the range of complex interactions between religion and science occurring in various dimensions and contexts. We need to pursue alternative models that embrace these various aspects of religion and science. In relation to those multiple aspects of religion and science, the work of Willem Drees may be mentioned. He uniquely proposes a much wider scheme of the areas of discussion concerning the relationship of religion and science, including religious experience and tradition as important elements of religion (Drees 1996, 43–9).

Finally, most current typologies, including Barbour's, seem to imply a hierarchical relation between religion and science, and their preferences lie in dialogue and integration in the direction of the scientific enterprise. Even Pannenberg and Haught are not free from the hierarchal tendency, with the notion of theological scope and religious level of reading in depth. Then, is there any possibility of constructing a model for the relationship between religion and science without such hierarchical, intellectually centered, dualistic tendencies?

Religion and Science as Enterprises for Mapping A Single World

Ways of thinking can determine how human beings perceive and understand the surrounding world. It is generally said, as mentioned above, that Westerners prefer analytical and dualistic thinking to comprehensive and correlative thinking. From the perspectives of an East Asian worldview and the *Yin-Yang* way of thinking, the writer proposes a "multi-map model" for representing the religion-science relationship. Taking religion and science as mapping activities, the "multi-map model" connotes a nonhierarchal, historical, multidimensional, and intimate relationship between religion and science. The model could be outlined as follows.

The writer considers all human activities, including religion and science, as an enterprise of making different maps within a single dynamic world as ways to construct narratives that might meaningfully strengthen human existence. During the process of evolutionary history, human beings have adapted to their environments and carried out various activities to ensure survival, reproduction, and prosperity. Even though these activities cannot be sharply or clearly separated from each other or classified into special categories, they may be differentiated into certain categories that designate "packages" of activities and behaviors. Some names denoting areas of culture, such as art, religion, politics, economy, and science, are terms conferred on different packages of activities with a particular orientation. In other words, "religion" and "science" are two names that have been coined to designate special categories of human activity. Theology and scientific theory can be seen as two different maps that result from these two activities of mapping. However, because the content of the activities and their conceptual boundaries could not be rigidly fixed, they remain fluid within history and culture. Given this premise regarding all human activities, the multi-map model takes a top-down approach to the religion-science relationship.

In this multi-map model, religion and science are not maps *per se*, but comprehensive activities for the making of maps. Mapping activities encompass a range of different factors, such as exploring the real world, understanding the world, planning and designing a map, seeking communal or official sanctions for a map, practicing exploration with a map, upgrading a map, and so on. Religion or science as mapping activities within the world encompass the ontological, epistemological, existential, and practical aspects of individual and community. If religion or science are considered as whole activities of making a map, a map then may be designated a "package" of knowledge–in this case, theology/doctrine or scientific theory.

There are many different scales of maps from a micro scale map to a macro scale map; for example, maps drawn to a scale of one mile to an inch

or a scale of a thousand miles to an inch. In my analogy, each map can be considered a knowledge system within a special area of religion or science. For example, if a large-scale map might be considered a comprehensive theory of world religions, a mid-scale map might be a Christian theology, and a small-scale map a doctrine of God. On the contrary, in science, if a large-scale map were counted as a comprehensive theory of natural science, a mid-scale map could be the theory of a particular natural science such as physics, and a small-scale map a specific theory of a natural science, such as relativity.

This description of multi-maps may be compared with the metaphor of modules in cognitive science. Just as we use various cognitive modules in the cognitive process, human beings and societies have developed and used various maps in their evolutionary process. Religion and science are two representative modules for effectively strengthening the survival and reproduction of human beings and societies. Of course, art, politics, and economy may be considered as other modules. We might think of the function of maps, which are used in the explanation of human cognitive processes and functions in evolutionary psychology, as something like the multipurpose "Swiss army knife." It seems that the human activity of making maps and adopting multi-maps is consonant with the human cognitive process as modules in the "massive modularity thesis" found in evolutionary psychology.

Moreover, proposed discussions of the religion-science relationship need some revision in relation to the historical aspects of "religion" and "science." Most current models do not consider seriously the historical circumstances of the emergence of the dual categories "religion" and "science" (Harrison 2006). The mapping analogy could help expose the historical and social features of religion and science. As we stated earlier, maps do not reproduce the real world but represent it with a set of signs or a symbol system. Of course, each map has different signs, symbols, and terms, which are mutually agreed upon by members of each guild. Maps only reflect or reveal the real world partially and approximately. Also, the metaphor of a map implies that religion and science are provisional, conceptual terms. That is, both of these characteristics are only present in relation to historical and social contexts. Since they are the tentative results of human activities in the process of exploring the world, they need to be continuously upgraded, corrected, updated, and revised.

The mapping metaphor can also incorporate various dimensions of religion and science; that is, theoretical, social, ritual, and so on. The current discourses on the religion-science relationship tend to put more or less emphasis on the intellectual aspect, whereas a mapping analogy implies multiple aspects of religious or scientific guild activities. Through communal activities such as investigating, designing, drawing, upgrading, and revisioning, the mapping metaphor tries to move beyond the intellectual

boundary to include theoretical, social, and ritual activities of religion and science. These other dimensions are important in relation to the subjective role of human beings in the enterprises of religion and science. Following the scientific revolution, the human being was no longer viewed as a dependent variable in the evolutionary history of the world. Passing the breakpoint, the human being became an independent variable, an almighty species, which could decide the future and destiny of all other forms of life in the world. However, as we have mentioned, current proposals for the science and religion relationship usually focus on the intellectual aspect; that is, reading and interpreting two books. In contrast, a "multimap model" reflects the active role of human beings in exploring the world, acquiring knowledge about the world, arranging and reconstructing knowledge through making a map, updating and renewing a map, using and practicing with a map within the world, and so on.

Each map, whether in religion, science, or the arts, functions effectively within its own context. However, each map could represent an aspect of human activities and the dynamic world with which those activities are related. Therefore, a map of religion or science alone would not be sufficient to explain and understand the world because it could be treated as an oversimplification due to its reductive view on the world. However, in personal and communal life, religion, science, politics, economy, the arts, and so on are not sharply divided into separated spheres; rather, they are considered together and simultaneously. Human beings often use two or more maps in their activities. Even though each map has been constructed differently according to its own symbol and sign system, certain maps are complementary and used simultaneously for dealing with related issues or events. For example, sometimes the maps of religion and politics are used together at the same time. There are multiple kinds of relationships among diverse maps. Of course, there are cases of adapting a single map. For example, when a scientific experiment is carried out in the laboratory, only the map of science is used.

When we understand the relationship between religion and science from an East Asian perspective, that relationship might be considered as a *Yin-Yang* relation. This way of thinking, which considers and includes contradiction and opposites at the same time, cannot be categorized in terms of an either/or, as an exclusive or absolute way of thinking. The *Yin-Yang* way of thinking presupposes the "explanatory pluralism" mentioned above. The holistic way of thinking embraces an integrative view of religion and science. The relationship between religion and science is considered as two versions of a map that represents the same territory. Its relationship is similar to the "two functions" view in a two languages model. However, even though religion and science perform different functions and roles, they are not separated from each other. Their relation is not contradictory or hierarchical but complementary or overlapping. As with the framework

of "both/and" rather than "either/or," the religion-science relation is not a competing and conflicting duality, but rather a complementary polarity.

In addition to that, when the maps of religion, science, politics, economy, and the arts are brought into relationship with each other, these relations could be understood as a pattern of the *Yin-Yang* relation. The *Yin-Yang* way of thinking, as a kind of relational and holistic thinking, may play a meaningful role for understanding the world especially in relation to religion and science. When two maps are considered at the same time, one of the maps under discussion may be tentatively revised. When an integrated map is provisionally created, one map may take a leading and the other a supplementary role. Some signs and symbols of the subsidiary map will be excluded or removed during the making of an integrated map. However, the roles of the leading and supplementary maps might be reversed according to the contextual intention of the activities. The relation of the leading and supplementary maps could be construed in terms of the polar relation of *Yang* and *Yin*. For example, such an integrated map could include a more intensive tendency in one map and a less intensive tendency in the other map.

We believe that there is no intrinsic ontological hierarchy between the two different maps for religion and science. There are many kinds of maps, which represent or designate some aspects of a dynamic world. Religion may be analogous to the construction of a cultural map, whereas science may be analogous to the construction of a contour map. Yet there is no superiority or hierarchy between a culture map and a contour map. The priority or comparative advantage of one or the other map depends on the practical context. For example, suppose we have two maps of Mt. Everest, one a cultural map and a contour map. The alpinist will prefer the contour map, whereas a trekker a cultural map, even though both have both maps. As *Yin* and *Yang* are changed and determined according to the position of the sun, the primacy of one map among many maps is decided by the practical context.

Conclusions

For East Asians, the world is a continuously changing reality in which multidimensional or multilevel events compose a dynamic network. This ceaselessly changing world may not be properly comprehended through an analytical way of thinking alone; such an understanding tends to partition reality into independent objects and use categorization to further understand it. Rather, we need a holistic way of thinking to capture the world in flux, for such a holistic approach is able to capture wholes and dialectics, changing and flowing states, and relationships. The East Asian way of thinking might offer an effective way to understand the dynamic world. To reiterate, the East Asian mode of thinking generally is not dualistic or

either/or, but correlational or both/and; East Asian logic, in particular, is not a logic of negation, but a logic of coexistence or a logic of polarity.

From an East Asian perspective, current Western discourses on the relationship between religion and science seem to focus on dualistic, hierarchical, and intellectual features. Among Western scholars writing on the religion and science issue, Pannenberg and Haught may be seen as representatives who propose an interconnected relationship between religion and science. Based on Pannenberg's concept of God—the reality deciding the possibility of all realities—he insists that the field of theology is broader than that of science, for science concerns itself with the laws of nature and theology deals with the totality of all individual incidents. On the contrary, Haught approaches religion and science in terms of textual reading, presenting religion as a deeper level of reading with more meaning than science. Haught and Pannenberg offer interrelated models for religion and science from a scope/width and level/depth, respectively. However, as theologians, they still maintain a hierarchical relationship between religion and science, preferring religion to science.

The writer tries to present the religion-science relationship from an East Asian way of thinking, or the so-called *Yin-Yang* way of thinking, which is holistic, relational, and inclusive. From the *Yin-Yang* perspective, the religion-science relationship would not be treated as a separated or competing duality, but rather as a correlated and complementary polarity. The writer proposes a "multi-map" model to rethink the religion and science relationship. Religion and science are provisional names designating special categories of human activities, and each enterprise may be likened to the activity of mapping. Here religion is understood as a cultural map and science as a contour map. The multi-map model tries to move beyond the hierarchical tendency between religion and science, to overcome excessively intellectual discourses and to emphasis the historical and social contexts of religion and science. It is anticipated that this alternative view of the relationship between religion and science will lead to a deepening and widening of the horizons of the religion-science discourses. When we attain a proper understanding of the religion-science relation, we may expect a promising future of our world.

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Change, Rhythm, and Spontaneity: Revisioning the Reality of God from East Asian Perspective, Drew University, Madison, NJ, 1997.

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