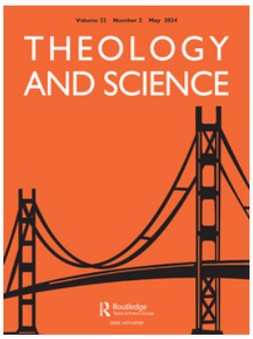

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Nonoverlapping Magisteria Versus Science-Religion Integration: Rereading Stephen Jay Gould

Samuli Helama

ABSTRACT
The principle of nonoverlapping magisteria (NOMA), by Stephen Jay Gould, is commonly cited in the science-religion literature as an archetype of a model separating the domains of science and religion. As such, NOMA represents the independence category in Ian Barbour's science-religion typology. However, it is commonly neglected that NOMA also permits dialogue and even integration of scientific and religious inputs at the personal level, i.e. beyond the level of magisteria. To distinguish the two levels, it is essential to note that Gould considered the magisteria not as any kind of domain but closely related to teaching authorities.

KEYWORDS
Barbour; evolution; religion-science models; science and religion; scientific materialism; soul

Introduction

Stephen Jay Gould (1941–2002) was an American palaeontologist and professor who made his career at Harvard University. His main fields of research were palaeontology, evolution, and the history of life on Earth. Apart from his scientific accomplishments, he was also known as a very productive writer and a notable populariser of science, popular writer supreme, who was not afraid to make comparisons of scientific findings and interpretations with other aspects of life.[1] In addition to his scientific articles, the list of his publications includes hundreds of essays and tens of books, some of which have been published posthumously.[2] He was a consciously public intellectual with a very personal style of rhetoric.[3] The scientific thinking of Gould culminated in his magnus opus, *The Structure of Evolutionary Theory*,[4] published in the year of his passing. Gould had been highly prolific indeed, with another type of book, *Rocks of Ages, Science and Religion in the Fullness of Life*,[5] published just three years earlier. In this book, Gould presented his principle entitled "Nonoverlapping Magisteria," abbreviated to NOMA, a term which he had coined in an essay published in Natural History a few years earlier.[6] In these two NOMA publications, Gould shared his personal conceptions of science and religion as two distinct subjects, both of which help us to explain the universe and human life from different and unrelated, i.e. nonoverlapping, perspectives.

The making of NOMA was a long process, however, as Gould describes it at length both in *Rocks of Ages* and the NOMA essay (which was posthumously reproduced in Filozoficzne Aspekty Genezy[7] and cited here for simplicity instead of the essay published in Natural History). This process involved his personal/professional experiences with the

ongoing science-religion discourse in America, Judeo-Christian perspectives, and likely also his own agnostic Jewish background. Since then, these writings by Gould (referred hereafter simply as his NOMA publications) have been frequently cited in the science-religion literature for the NOMA principle, which is now commonly taken as an archetype of a model separating the realms of science and religion. At the time of this writing, the *Rocks of Ages* book and the Nonoverlapping Magisteria essay have received 1533 and 787 citations[8] respectively. It could be rightfully stated that the NOMA principle is one of the main achievements of Gould's esteemed career, or even more than that, the NOMA publications exemplify his broadminded thinking stemming from the extent of his reading that went beyond scientific methods and theories made in the field of natural history and evolution.

Despite the connotations of its name (i.e. nonoverlapping) and against the common way of citing NOMA in the literature, as a model to separate science and religion, NOMA could also be seen to maintain a much widened and multifaceted view of human life, a view that has, however, remained more or less neglected. It is a purpose of this paper to delve into this other side of NOMA and to view the principle from contrasting angles, which are, indeed, available to the explorer of the NOMA publications. To do so, NOMA is viewed in the light of Barbour's science–religion typology[9] as well as in the context of NOMA citing literature, in comaprison to the literature and personal viewpoints Gould cited when he formulated the principle. It is also suggested that the deeper reading of the NOMA publications not only widens the significance of the principle itself but also provides insights into Gould's motivation to formulate NOMA in the first place and later to even devote a book to the specific topic. In addition, the NOMA publications provide a window into the mind of a palaeontologist inspired by Scripture, which can be compared to the worldviews of other American palaeontologists who are devout Christians.[10]

This paper starts from the definition of magisterium. The paper then proceeds from the common standpoint that NOMA represents the independence between science and religion. Next, to elaborate the NOMA principle, this stance is contrasted by Gould's hitherto much-neglected views which proposed a dialogue and even integration of scientific and religious thoughts as contributors to a more coherent understanding of life. This interpretation involves the dichotomy of "facts" and "ethics," respectively represented by the two magisteria of science and religion, as stemming from Gould's points of view. In so doing, two distinct levels of conception are derived from Gould's ideation and introduced in this paper to emphasise both the nonoverlap of the two magisteria but also the potential for the overlap between science and religion. To better demonstrate the outlines of Gould's two-sided approach, a schematic model to illustrate the two levels, those of magisteria and personal life with their nonoverlapping and overlapping realms, is presented. Last, the paper deals with Gould's concepts of religion as well as the limitations of the NOMA formulation, discussing also the legacy of NOMA in the light of the new perspectives arising from the results of this study.

Why and How to Define Magisterium

To discuss the NOMA, it is essential to understand the meaning and importance of Gould's choice of using the word magisterium. For Gould,[11] the term magisterium signifies a domain of authority in one form of teaching holding the appropriate tools

for meaningful discourse and resolution. It originates from the Latin *magister*, which refers to master, considered to be the highest role that an individual can carry out based on the knowledge acquired.[12] This definition would resonate closely with the word professorship in the academic world. In the Roman Catholic Church, however, the word magisterium has a longer history. According to Sullivan,[13] the modern use of the word refers to the role and authority of the teaching office of bishops. He also points out that this meaning differs from an earlier one by St. Thomas Aquinas, for whom the magisterium meant the "chair" of the bishops in the cathedral, and that of professor at a university.

Gould's use of the word magisterium is at least superficially similar to that of St. Thomas, that is, much of NOMA involves discussion of the magisteria of science and of religion, these and their authorities resonating with the twofold division of the "chairs." It is essential to note that Gould particularly emphasised the use of the word magisterium due to its appropriateness for discussing NOMA, in which context the magisterium is not a domain of any kind, but limited to institutional mastery supposed to maintain the authority of its own domain. In this regard, the power of authority could even be seen to provide an autochthonous mechanism operating to separate the magisteria from each other. It is also noteworthy that Gould sought support for NOMA from Popes Pius XII and John Paul II, rather than from his devout Christian palaeontology colleagues (see below). This approach could be seen to reinforce the conception of magisterium particularly as a teaching authority. On the other hand, it may be noted that the terms "Catholic magisterium"[14] and "magisterium of art" were also used by Gould,[15] which suggests that the magisterium of religion he defined was not to be confused with that of the Catholic Church and that the number of magisteria were not limited in his thinking to those of science and religion.

Levels of Magisteria: Independence and Non-conflict

Central to NOMA, the "magisterium of science" and "magisterium of religion" can be succinctly defined as the dichotomy of facts and ethics. According to Gould,[16] science probes the factual characteristics of the world by means of empirical research, this definition also including the theories that explain the observations made to construct scientific knowledge. Scientific methods and ways to interpret knowledge and data have developed over the course of time to fulfil the needs of the current scientific research.[17] Religion, on the other hand, is the search for proper ethical values and the spiritual meaning of our lives.[18] These matters are linked only to religion that have a long history compared to that of modern science, religion constituting a set of questions that cannot be answered by scientific means. Gould[19] provides a short list of such questions by asking: are we (humans) worth more than bugs or bacteria, do we have a right to drive other species to extinction, to what extent can we use genetic technology? That is, some of the questions belonging to the magisterium of religion have been raised by the factual data and methods developed in the magisterium of science, and yet, they cannot be solved scientifically. This division of science and religion relates, according to the general ideation by Gould, to the dichotomy of facts and ethics, which is at the core of understanding NOMA. Science explores the empirical constitution of the universe, whereas religion involves the search for proper ethics and values. Gould[20] proceeds to

use the common metaphorical image of oil and water to describe this relationship of the two magisteria.

Barbour[21] developed a science-religion typology where the two can be related in the literature in terms of the conflict, independence, dialogue, and/or integration. Thus, the first way of relating science and religion in this typology is the position of conflict.[22] As pointed out by Kelley,[23] this position cannot be related to NOMA, which inherently and strongly highlights the nonoverlap between the two magisteria.[24] In Gould's own words, religion cannot dictate the nature of factual conclusions that belong to the magisterium of science, which leads to the position that science, in turn, cannot claim insights into moral truth from its own domain.[25] The second way of relating science and religion in Barbour's typology is the position of independence.[26] In the context of the foregoing arguments, NOMA clearly represents the characteristics of this category. As previously stated by Bryan,[27] this is the position by far most characteristic of NOMA and holds the key to summarising the relatedness of the two magisteria.[28] The position is not, according to Gould,[29] a diplomatic solution but one based on intellectual and moral grounds. Kelley[30] also concurred with the view that NOMA should be placed in the independence category, with science and religion confined to distinct realms. According to Barbour, a typical way of avoiding conflict between science and religion is indeed to view them as independent and autonomous.[31] In this sense, it could even be stated[32] that a large part of *Rocks of Ages* is actually devoted to setting the two magisteria apart from each other, thus making the book one long argument for their nonconflicting relationship (or unrelatedness). Clearly, both independence and autonomy are omnipresent in the constitution of NOMA: the two magisteria do not fuse, they are nonoverlapping.

The distinct separation of science and religion is the context in which the NOMA principle has been frequently cited in the related literature. This could be exemplified by citations in which NOMA is generally referred to as an idea that understands science and religion as separate but equal realms of human experience. Allmon[33] noted that NOMA holds that neither realm can, or should, make claims on the other's legitimate domain of influence.[34] Hameed[35] regarded Gould as a scientist preferring a separation of science and religion where the natural world is explored by the domain of science and moral issues by the domain of religion.[36] Moreover, NOMA was considered to describe this separation of science and religion.[37] According to Shapiro,[38] NOMA offers a negotiated disengagement between science and religion, noting Gould's claims that the domains of scientific and religious concepts remain separate, and that any attempt to fuse them is based upon a faulty understanding of what the demarcations of science and religion ought to be.[39] Ruse[40] discussed NOMA in the context of the independent argument, remarking Gould as the most-publicized enthusiast for the position that that science and religion, being different magisteria, cannot interact and hence cannot clash.[41] Stenmark[42] labelled Gould as a proponent of the independence model, based on NOMA's arguments that science and religion each have their own distinctive domain and characteristic methods, and each being justified on their own terms, i.e. they are two separate jurisdictions.[43] Nieminen et al.[44] noted that NOMA is very similar to the independence model of Barbour and quite similar to the model of "two languages" (the latter being a separatist model proposed by Peters,[45] who, however, juxtaposed it with Barbour's independence model). Based on these citations,

several implications could be drawn. First, NOMA is exclusively cited as an independent model and Gould as a supporter of the independence argument. Second, science and religion are commonly characterised in the literature purely as "domains," not as "magisteria." Third, that the independence concerns primarily the two magisteria (rather than any kind of domain) appears not to be given emphasis. It could be construed that this reluctance to use original terminology (see above) may have at least partly masked Gould's intention to limit the independence arguments to the level of magisteria (i.e. teaching authorities).

Personal Level: Dialogue and Integration

The independence and nonconflicting position of the magisteria of science and religion are strong and pronounced in NOMA, however, this does not fully cover what NOMA represents. On the contrary, NOMA also suggests maintaining a dialogue between science and religion. As Gould[46] states, "every one of us must reach some decisions about the rules we will follow in conducting our own lives," which in turn takes place by paying "at least rudimentary attention to both magisteria of religion and science," the real success in this sense being finally reached with "serious engagement with the deep and difficult issues of both magisteria." These statements seem, at first sight, to contradict all that has been mentioned above about the separation of science and religion. However, Gould[47] goes on to clarify the issue by invoking two separate levels of conception: "The magisteria will not fuse," he explains, "each of us must integrate these distinct components into a coherent view of life." The distinct components referred to in NOMA are the outputs of religion and science, or "whatever we choose to name these domains of ethical and factual inquiry." In other words, the two distinct levels of conception are needed to maintain the separation and independence of science and religion on the level of magisteria, while also maintaining the engagement of factual and ethical inquiry on a personal ("every one of us") level. NOMA not only seems to allow, but to encourage and even demand this engagement, as could be construed from the combination of verbs "must integrate."

Owing to the foregoing arguments, NOMA could also represent the dialogue category[48] in Barbour's typology, even allowing for similarities with Barbour's fourth category,[49] which represents an integration of scientific and religious disciplines. Such arguments must be made with caution, however, with inferences to be made merely on a personal level, so as not to fuse the teaching authorities, i.e. the magisteria. While the relatedness of NOMA with Barbour's dialogue category was previously made by Kelley,[50] it could be noted that generally this way of outlining NOMA has not gained favour, in contrast to the literature citing the principle for its independence statements. It is likely that this follows straightforward reading of the title of the principle which, in fact, merely highlights the nonoverlap of the magisteria; on the other hand, it could be assumed that the confusion may at least partly stem from the way the original NOMA publications were written, with no clear reference to the levels (or any similar elements) that separate the independence of the magisteria while also permitting the dialogue between the two on a personal level. In this study, the concept is further elaborated by a schematic illustration of the two magisteria and the dichotomy of facts and ethics (in terms of NOMA), including an overlap between the outputs of the two restricted to a personal level (Figure 1).

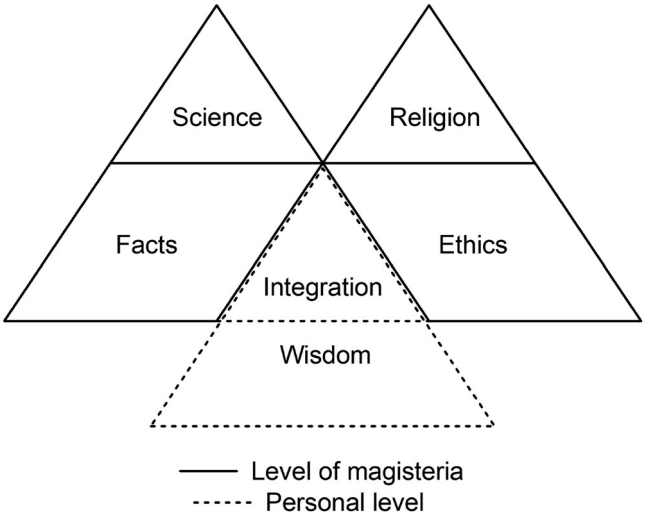

Figure 1. A schematic illustration of NOMA. The realms of science and religion are represented by triangles with their respective constituents of facts and ethics. The nonoverlapping parts of the triangles (continuous line) corresponds to the level of the magisteria (teaching authority) on which the magisterium of science and the magisterium of religion remain nonoverlapping. Their overlap is only accepted on a personal level (dashed-line triangle) on which level we are urged to integrate science and religion for the pursuit of wisdom.

In NOMA, the aim of the dialogue between science and religion seems to be an integration of the two, the main purpose of which is to seek wisdom. Whoever succeeds at integration will gain something "dignified by one of the most beautiful words in any language: wisdom."[51] This idea of attaining wisdom through science-religion integration is presented though the NOMA publications.[52] However, Gould does not appear to explicitly define wisdom, though he[53] does allude to the wisdom of King Solomon by quoting one of his proverbs: "As cold waters to a thirsty soul, so is good news from a far country" (Proverbs 25:25). It is thus obvious that Gould sets high standards for the attainment of wisdom, something that cannot be reached on a short journey. In any case, the "two components of wisdom in a full human life" consist of "our drive to understand the factual character of nature" and the "need to define meaning in our lives and a moral basis for our actions."[54] It could be construed that, just as the two components of wisdom are to be integrated in NOMA merely on a personal level, the necessity and desire for this integration are likewise defined by Gould through the lens of his own personal premises, drives, and needs. Moreover, it seems it is this successful integration that represents the definition of wisdom. And conversely, the former appears to be defined by the latter. It can be construed that it is not only the dialogue between science and religion but also the reciprocal effect on one's mind through an intelligent intercommunication via the facts and moral truth that can fulfil the definition. In the schematic illustration of NOMA, wisdom forms the base of the triangle representing one's own personal inquiries, as evoked by the two components of wisdom arising from the respective magisteria of science and religion (Figure 1).

Despite the missing definition for wisdom in NOMA, some comparison with major ideas and general views on the topic could be made, without intending to capture the

many approaches to wisdom found in multiple fields of inquiry. Here, it is simply noted that the conception of wisdom as presented in the NOMA publications appears to markedly accord with an approach to viewing wisdom as knowledge. According to Ryan,[55] such an approach can be divided into three kinds of wisdom: (i) wisdom as extensive actual knowledge, (ii) wisdom as knowing how to live well, and (iii) wisdom as knowing how to live well, and succeeding at living well. On the other hand, these kinds of wisdom concur with an approach whereby (i) a person with theoretical wisdom is a person with substantial knowledge about the universe and our place in it and (ii) a person with practical wisdom needs to know and understand the most important goals and values of life.[56] Accordingly, the conception of wisdom as knowledge would correlate with the structure of NOMA, whereby knowledge of the universe and knowledge of goals and values of life, as facts and ethics, could lead to the final form of wisdom via an integration of the two fields of inquiry (Figure 1). Although this interpretation represents an obvious simplification of NOMA's science-religion-wisdom reasoning, it shows the potential for connection or contextualisation that the more superficial interpretation of NOMA as purely an independence model does not permit.

Papal Letters

That NOMA can be understood as a model not only for the independence of science and religion suggests that some parts of the argumentation presented in the NOMA publications should be reconsidered in a wider context. In this regard, an interesting element of the NOMA discussion deals with the messages from Pope John Paul II, who addressed the themes of the origins of life and scientific questions of evolution in the Pope's "Message to the Pontifical Academy of Sciences."[57] Later, similar themes were considered in the papal encyclical *Fides et Ratio* addressed to the bishops of the Catholic Church.[58] In his NOMA publications, Gould cites the former, building his argumentation also on the earlier (promulgated in 1950), more conservative papal encyclical *Humani Generis* by Pope Pius XII.[59]

Levels of Magisteria

This discussion begins with quotation of Pius XII:

> Teaching Authority of the Church does not forbid that, in conformity with the present state of human sciences and sacred theology, research and discussions, on the part of men experienced in both fields, take place with regard to the doctrine of evolution, in as far as it inquires into the origin of the human body as coming from pre-existent and living matter—for the Catholic faith obliges us to hold that souls are immediately created by God.

In this regard, Gould[60] sees Pius XII as leaving the study of physical evolution outside the magisterium of religion, this position according with the standard account of NOMA. For Gould,[61] similar lines of nonconflicting reasoning are continued when he quotes John Paul II:[62] "In his Encyclical *Humani Generis* (1950), my predecessor Pius XII had already stated that there was no opposition between evolution and the doctrine of the faith about man and his vocation."

The domains press harder against each other, however, when Gould[63] goes on to explore the question of the origin and constitution of the human soul, further quoting John Paul II:[64]

> With man, then, we find ourselves in the presence of an ontological difference, an ontological leap, one could say. However, does not the posing of such ontological discontinuity run counter to that physical continuity which seems to be the main thread of research into evolution in the field of physics and chemistry?

In other words, how can we reconcile the physical continuity in human evolution and the divine infusion of the soul at a specific moment of evolution? Gould[65] sees the handling of the potential problem presented in the papal message to be in agreement with NOMA principles, and he quotes John Paul II[66] as follows:

> Consideration of the method used in the various branches of knowledge makes it possible to reconcile two points of view which would seem irreconcilable. The sciences of observation describe and measure the multiple manifestations of life with increasing precision and correlate them with the time line. The moment of transition to the spiritual cannot be the object of this kind of observation.

According to Gould,[67] the soul represents a subject that cannot be proven or disproven scientifically and, as a result, it lies outside the magisterium of science. For him, the "consideration of the method" by John Paul II appears to refer to the ways of inquiry specific to science and religion and thus to their separate magisteria; and conceptualising the issue in this way seems even to emphasise the power of NOMA.

Personal Level

Additional reference could be made to the papal encyclical *Fides et Ratio* by John Paul II.[68] In this encyclical, the different modes of truth are briefly summarised:

> Most of them depend upon immediate evidence or are confirmed by experimentation. This is the mode of truth proper to everyday life and to scientific research. At another level we find philosophical truth, attained by means of the speculative powers of the human intellect. Finally, there are religious truths which are to some degree grounded in philosophy, and which we find in the answers which the different religious traditions offer to the ultimate questions.

Here, the encyclical distinguishes three modes of truth: scientific, religious, and philosophy as something in between the two. The latter does not only denote the classical philosophers or academic thinkers. Continuing directly from the last quotation, the encyclical describes the agents of this mode of truth:

> The truths of philosophy, it should be said, are not restricted only to the sometimes ephemeral teachings of professional philosophers. All men and women, as I have noted, are in some sense philosophers and have their own philosophical conceptions with which they direct their lives.

In this regard, the truths of philosophy can be the product of layperson's intellect.

Rocks of Ages was written in the summer of 1998,[69] whereas *Fides et Ratio* was promulgated on September 14 in the same year, which precluded Gould from citing the latter. Understanding NOMA as a model for dialogue and integration of science and religion

beyond the level of magisteria nevertheless makes it possible to elaborate the potential connections between NOMA and the encyclical from a wider perspective. In this regard, the "modes of truth" and the "truths of philosophy" presented in *Fides et Ratio* as belonging to "all men and woman," resonate quite closely with Gould's caution[70] that "all human beings must pay at least rudimentary attention to both magisteria of religion and science" and that, in this sense, "every one of us must reach some decisions about the rules we will follow in conducting our own lives." For Gould,[71] the aim and reward of such "engagement with the deep and difficult issues of both magisteria" is wisdom (Figure 1). In *Fides et Ratio*, the purpose of such philosophising is set for all men and women as the corresponding quotation continues: "In one way or other, they shape a comprehensive vision and an answer to the question of life's meaning; and in the light of this they interpret their own life's course and regulate their behaviour." It could be construed that it is the real fusion of the knowledge and modes of truth, in *Fides et Ratio* and in NOMA, that results in the wisdom to attain the meaning of life.

Personal Constitution—Personal Limitations

These connections notwithstanding, NOMA has been criticised, from religious points of view in particular. This criticism generally focuses on the scientific materialism that markedly restricted Gould's capability to formulate the definition of religion, reducing it to ethics and values. As noted by Haught,[72] Gould presented "religion in a way that most religious people themselves cannot countenance."[73] Indeed, Gould[74] regarded himself as a Jewish agnostic whose parents had abandoned all theology and religious belief. This was likely a position from which he did not understand what religion may mean to the life of a devout believer, and which may have, at least partly, led him to suppress the meaning and value of religion when fabricating NOMA. Limited to ethics, NOMA's definition of religion could exclude ontological claims, for instance the resurrection and eternal life, which, as Ruse[75] argued, will be judged as false if they fall under the magisterium of science. Gould's understanding of the issue was not that straightforward, however, as revealed by the question of the soul (see above) which, as a subject remaining unprovable scientifically, would lie outside the magisterium of science (similar to evolution, which was found to remain outside the magisterium of religion in *Humani Generis*). This discussion was not a problem for Gould,[76] as he did not "personally accept the Catholic view of souls" but honoured "the metaphorical value of such a concept both for grounding moral discussion and for expressing what we most value about human potentiality." By this line of his reasoning, the soul should be in the domain of ethics and hence the magisterium of religion.

Perhaps less discussed issues relate to the sharp line between scientific and religious inquiry, which is one of the main characteristics of NOMA, on the level of magisteria. Moritz[77] addressed the ramifications arising from the sharp boundaries of the scientific and religious domains of knowledge, both with their own strict ranges of inquiry. He recognised problems if the potential crossovers are ignored when they are true, which may be the case when scientists or other actors endorse NOMA, maintaining that the two types of inquiries are completely nonoverlapping. These issues relate to a wider philosophical discussion of understanding science as a cultural, historical, and social enterprise that is in no way detached from the humanities. Such influences are not included in

NOMA's definition of science, which itself would mirror the view that the facts (describing the world by means of scientific inquiry) can be obtained purely objectively. This, however, may be an oversimplification in the presence of intersubjectivity, rather than strict objectivity, in scientific rationality.[78] Consequently, it could be construed that the avoidance of conflict between science and religion by using a sharp demarcation between the two, as fabricated in NOMA, may instead result in conflict between science and philosophy, the philosophy of science in particular. It appears that while NOMA's definition of religion remains far from ideal, that of religion is perhaps too ideal a vision. More generally, it is not only NOMA's definition of religion but also that of science that would seem to curtail the discussion needed to better understand the outlines of the magisteria.

It may be fair to state that Gould's personal view of religion was of secular nature, this conception then being incorporated into NOMA's definition of religion. Accordingly, this ought to also be the context in which Gould's personal undertakings for the dialogue between science and religion should be viewed and in which NOMA could have actually produced interaction between the two in Gould's own worldview. In this regard, Gould does not really reveal his personal ways of thinking through the discourse, other than exploiting the metaphorical approach (of soul) which does not appear to provide any means for dialogue, but rather for explaining the ways in which he considers the magisteria as separate. Beyond the level of magisteria, on the other hand, what else would the metaphorical approach represent other than an outcome of his personal (secular) attempt at a dialogue with religion? Potentially, this approach could be viewed as a method of thinking that, though he may not have revealed it to his opponents, helped him to maintain his credibility and position as "a man of good will"[79] during discussions with deep religious undertones. A representative example of such discussions may well be that with French and Italian Jesuit priests and professional scientists at the Vatican in 1984, as described in the first lines of his original NOMA essay.[80]

These implications notwithstanding, Gould's NOMA would seem to contain no indications of how to practically integrate the scientific and religious realms "into a coherent view of life." In spite of that, Gould[81] seems to have believed such an integration to be indeed possible, which in his words meant that "the science of Darwinism is fully compatible with conventional religious beliefs."[82] These words appeared in a short paper predating the actual NOMA publications, where Gould expressed his admiration of a group of evolutionary scientists, naming Asa Gray as "a devout Christian" who "favored natural selection," Charles D. Walcott as one "who believed that God had ordained natural selection to construct a history of life according to His plans and purposes," and Theodosius Dobzhansky as "a believing Russian Orthodox."[83] While his admiration for these scholars may have primarily stemmed from their merits in scientific inquiry, it seems undeniable that Gould also appears to have appreciated not only the coexistence but the compatibility of the scientific and religious realms in the great minds who simultaneously maintained their reasoning in science and their belief in God.

Personal views on integration have been provided by Gould's American palaeontology colleagues who are both esteemed scientists and committed Christians. According to Patricia Kelley,[84] the reconciliation of the inquiries of a geologist relying on scientific methods with the faith of a person believing in God may be obtained by freedom from literalism. She separates her sides as a geologist and a person of faith, the position

that closely follows the principle of NOMA as an independent model at the level of magisteria. From her practical point of view, however, God can be seen to use the natural processes of evolution as the means of creating. In this way, the magisteria do not threaten each other, rather evolution provides "a glimpse of the incredible power of God to create." Peter Dodson[85] discussed his faith as a palaeontologist demonstrating the many ways religion gives meaning to human life and experience. Similar to Kelley, he perceives the order and regularity revealed in natural mechanisms by modern science as a reflection of the nature of God. In short, believing in God provides scientific understanding a wider view of knowledge. Common to both palaeontologists, insights from the magisteria of science and religion can be in dialogue when the results from the former are put in a wider perspective provided by the latter. In contrast to Gould, they see no need for any metaphorical level to integrate the two, but that more valuable human experience is attained by direct personal acceptance of God as creator. While these views of Christian scientists have probably not been directly inspired by the aspects of NOMA permitting the personal-level interaction between science and religion, it is notable that at least Patricia Kelly held the view that NOMA urges for a dialogue between the two.

Gould did not personally believe in a God or deity but valued the cultural role of religion, albeit not its revealed or supernatural part. Yet, he did not engage in strident criticism of religion[86] for which his "own scientific colleagues, some militant atheists"[87] were well known. It is likely that Gould wanted to put some distance between himself and the more publicly anti-theistic neo-Darwinians, as Haught[88] remarked. This was the background that so clearly shaped the characteristics of NOMA. It was probably written as spiritually as possible while maintaining his scientific materialism, with an idea to leave behind a message of goodwill, a humane testament. Importantly, NOMA appears to encompass both the level of magisteria and that of personal thought. As such, his aim was likely not to reach full objectivity but to write from the perspective of his personal experiences, with insights into his personal wisdom of how to live life as a palaeontologist. By definition, NOMA remains as personal as Gould himself.

Notes

1. Warren D. Allmon, "The Structure of Gould: Happenstance, Humanism, History, and the Unity of his View of Life," in *Stephen Jay Gould: Reflections on his View of Life*, eds. Warren D. Allmon, Patricia H. Kelly, and Robert M. Ross (Oxford: Oxford University Press, 2009), 3–68.
2. Warren D. Allmon, "Bibliography: Stephen Jay Gould," in *Stephen Jay Gould: Reflections on his View of Life*, eds. Warren D. Allmon, Patricia H. Kelly, and Robert M. Ross (Oxford: Oxford University Press, 2009), 335–379.
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