

NOMA Defined and Defended



HE COULD CERTAINLY AFFORD THE fees, or simply command the performance by imperial decree, but has any student ever been so blessed in the quality of a private tutor than Alexander the Great, who got several years of undivided attention from Aristotle himself? Now Aristotle preached, as a centerpiece of his philosophy, the concept of a “golden mean,” or the resolution of most great issues at a resting point between extremes.

But I wonder how well Aristotle’s pupil learned his lessons when I contemplate the two radically different, indeed diametrically opposed, versions of his most famous anecdote. The usual story holds that Alexander, at the height of his military expansion, wept because he had no new worlds to conquer—the dilemma of boredom when “been there, done that” applies to all

potential projects. But Plutarch's version, from the first century A.D. and therefore relatively close to the source, features a precisely opposite problem—the dilemma of impotence in a universe too vast to encompass, or even to dent. Plutarch's account also becomes slightly more believable in expressing Aristotle's own doctrine of the eternity of worlds: "Alexander wept when he heard . . . that there was an infinite number of worlds, [saying] 'Do you not think it a matter worthy of lamentation that when there is such a vast multitude of them, we have not yet conquered one?'"

But maybe Alexander understood the golden mean after all, for if we add these extreme stories and divide by two, we may find an intermediate resting place of satisfaction for past achievements, combined with sufficient stimulation for further activity—and therefore no cause for any tears.

I am, of course, only jesting feebly about a symbol chosen to represent the general concept of resolution. Still, I wish to raise a serious point about our usual approach to complex problems, a theme well illustrated by these opposite versions of Alexander's anecdote. Our minds tend to work by dichotomy—that is, by conceptualizing complex issues as "either/or" pairs, dictating a choice of one extreme or the other, with no middle ground (or golden mean) available for any alternative resolution. (I suspect that our apparently unavoidable

tendency to dichotomize represents some powerful baggage from an evolutionary past, when limited consciousness could not transcend "on or off," "yes or no," "fight or flee," "move or rest"—and the neurology of simpler brains became wired in accordance with such exigencies. But we must leave this speculative subject for another time and place.)

Thus, when we must make sense of the relationship between two disparate subjects (science and religion in this case)—especially when both seem to raise similar questions at the core of our most vital concerns about life and meaning—we assume that one of two extreme solutions must apply: either science and religion must battle to the death, with one victorious and the other defeated; or else they must represent the same quest and can therefore be fully and smoothly integrated into one grand synthesis.

But both extreme scenarios work by elimination—either the destruction of one by another, or the merger of both into a large and pliant "whole ball of wax" without sharp edges or incisive points. Why not opt instead for a "golden mean" that grants dignity and distinction to *each* subject? We might borrow a paradoxical line from the English essayist G. K. Chesterton, who was not just indulging a national stereotype for dousing anything vibrant and spontaneous with the voice of stolid and restrictive "reason" ("no sex, please, we're

British”), but who epitomized a profound insight about breaking impasses and gaining insight when he stated that “art is limitation; the essence of every picture is the frame.”

Consider any of the classically “big” and diffuse “core” questions that have troubled people since the dawn of consciousness: for example, how are humans related to other organisms, and what does this relationship mean? This question contains such richness that no single formulation, and no simple answer, can possibly provide full satisfaction. (All questions of such scope also embody a good deal of “slop” and loose construction, requiring clarification and agreement about intended definitions before any common ground can be sought.)

At this point we must invoke Chesterton’s notion of framing and this book’s central theme of NOMA, or non-overlapping magisteria. Think of any cliché or standard epigram about distinct items that don’t mix—the oil and water, or apples and oranges, of American usage; the chalk and cheese of the corresponding British motto; the two human traditions that cannot join (“and never the twain shall meet”) at least until divine power ends the present order of things in Kipling’s imperial world (“Till Earth and Sky stand presently at God’s great Judgment Seat”). Each domain of inquiry frames its own rules and admissible questions,

and sets its own criteria for judgment and resolution. These accepted standards, and the procedures developed for debating and resolving legitimate issues, define the magisterium—or teaching authority—of any given realm. No single magisterium can come close to encompassing all the troubling issues raised by any complex subject, especially one so rich as the meaning of our relationship with other forms of life. Instead of supposing that a single approach can satisfy our full set of concerns (“one size fits all”), we should prepare to visit a picture gallery, where we can commune with several different canvases, each circumscribed by a sturdy frame.

As an example of NOMA applied to a “core issue,” let us focus on two distinct frames—that is, two non-overlapping magisteria—surrounding quite different, but equally vital, questions in our search for the meaning of our relationship with other living creatures. On the one hand, we seek information about matters of fact with potential “yes or no” answers (at least in principle; in practice, these answers may be quite difficult to achieve). Some factual questions engage issues of the broadest scale. More than a century ago, for example, the basic formulation of evolutionary theory resolved several problems of this magnitude: Are we related to other organisms by genealogical ties or as items in the ordered scheme of a divine creator? Do humans look so

much like apes because we share a recent common ancestor or because creation followed a linear order, with apes representing the step just below us? Other questions, more detailed and more subtle, remain unanswered today: Why does so much of our genetic material (so-called "junk DNA") serve no apparent function? What caused the mass extinctions that have punctuated the history of life? (We pretty well know that an impacting extraterrestrial body triggered the last event 65 million years ago, wiping out dinosaurs and giving mammals a chance, but we have not resolved the causes of the other four major dyings.)

As explained in the Preamble, such questions fall under the magisterium of an institution that we have named "science"—a teaching authority dedicated to using the mental methods and observational techniques validated by success and experience as particularly well suited for describing, and attempting to explain, the factual construction of nature.

But the same subject of our relationship with other organisms also raises a host of questions with an entirely different thrust: Are we worth more than bugs or bacteria because we have evolved a much more complex neurology? Under what conditions (if ever) do we have a right to drive other species to extinction by elimination of their habitats? Do we violate any moral codes when we use genetic technology to place a gene from

one creature into the genome of another species? Such questions—and we could fill a long book with just a surface-skimming list—treat the same material of "us and them," but engage different concerns that simply cannot be answered, or even much illuminated, by factual data of any kind. No measure of mental power in humans versus ants will resolve the first question, and no primer on the technology of lateral genetic transfer will provide much help with the last issue.

These questions address moral issues about the value and meaning of life, both in human form and more widely construed. Their fruitful discussion must proceed under a different magisterium, far older than science (at least as a formalized inquiry), and dedicated to a quest for consensus, or at least a clarification of assumptions and criteria, about ethical "ought," rather than a search for any factual "is" about the material construction of the natural world.¹ This magisterium

¹I apologize to colleagues in philosophy and related fields for such an apparently cavalier "brush by" of an old and difficult topic still subject to much discussion, and requiring considerable subtlety and nuancing to capture the ramifying complexities. I recognize that this claim for separation of the factual from the ethical has been controversial (and widely controverted) ever since David Hume drew an explicit distinction between "is" and "ought." (I even once wrote an embarrassingly tendentious undergraduate paper on G. E. Moore's later designation of this issue, in his *Principia Ethica* of 1903, as "the naturalistic fallacy.") I acknowledge the cogency of some classical objections to strict separation—

of ethical discussion and search for meaning includes several disciplines traditionally grouped under the humanities—much of philosophy, and part of literature and history, for example. But human societies have usually centered the discourse of this magisterium upon an institution called “religion” (and manifesting, under this single name, an astonishing diversity of approaches, including all possible beliefs about the nature, or existence for that matter, of divine power; and all possible

particularly the emptiness of asserting an “ought” for behaviors that have been proven physically impossible in the “is” of nature. I also acknowledge that I have no expertise in current details of academic discussion (although I have tried to keep abreast of general developments). Finally, I confess that if an academic outsider made a similarly curt pronouncement about a subtle and troubling issue in my field of evolution or paleontology, I’d be pissed off.

I would, nonetheless, defend my treatment not as a dumbing down, or as disrespect for the complexity of a key subject, but as a principled recognition that most issues of this scope require different treatments at various scales of inquiry. Broad generalizations always include exceptions and nuanced regions of “however” at their borders—without invalidating, or even injuring, the cogency of the major point. (In my business of natural history, we often refer to this phenomenon as the “mouse from Michigan” rule, to honor the expert on taxonomic details who always pipes up from the back of the room to challenge a speaker’s claim about a general evolutionary principle: “Yes, but there’s a mouse from Michigan that . . .”) Among experts, attention properly flows to the exceptions and howevers—for these are the interesting details that fuel scholarship at the highest levels. (For example, my colleagues in evolutionary theory are presently engaged in a healthy debate about whether a limited amount of Lamarckian evolution may be occurring for restricted phenomena in bacteria. Yet the

attitudes to freedom of discussion vs. obedience to unchangeable texts or doctrines).

I most emphatically do not argue that ethical people must validate their standards by overt appeals to religion—for we give several names to the moral discourse of this necessary magisterium, and we all know that atheists can live in the most firmly principled manner, while hypocrites can wrap themselves in any flag, including (most prominently) the banners of God and country.

fascination and intensity of this question does not change the well-documented conclusion that Darwinian processes dominate in the general run of evolutionary matters.) But the expert’s properly intense focus on wriggles at the border should not challenge or derail our equally valid broad-scale focus on central principles. The distinction of “is” from “ought” ranks as such a central principle, and this little volume has been written (for all intelligent readers, and without compromise or dumbing down) as a broad-scale treatment.

To cite an analogy: At the Arkansas creationism trial (discussed in detail in chapter 3), philosopher Michael Ruse presented the famous Popperian definition of falsifiability as a chief criterion for designating a topic as scientific (with unfalsifiable “creation science” banned by this standard). Judge Overton accepted Ruse’s analysis and used this criterion as his main definition of science in reaching his decision to strike down the Arkansas “equal time” law. But falsificationism (like the is-ought distinction, and like Darwinian domination versus a little bacterial Lamarckism) represents a good generality, subject to extensive debate and controversion for several borderland subthemes among professional scholars. Some academic philosophers attacked Ruse for “simplifying” the subtleties of their field, but I would strongly defend his testimony (as did, I believe, the great majority of professional philosophers) as a valid analysis for the appropriate general scale of broad definitions.

But I do reiterate that religion has occupied the center of this magisterium in the traditions of most cultures.

Since every one of us must reach some decisions about the rules we will follow in conducting our own lives (even if we only pledge ourselves to the doctrine of unstinting self-promotion, whatever the cost to other people)—and since I trust that no one can be entirely indifferent to the workings of the world around us (if only to learn enough about the speed of moving vehicles that we don't step into lanes of rapid traffic whenever we wish to cross the street)—all human beings must pay at least rudimentary attention to both magisteria of religion and science, whatever we choose to name these domains of ethical and factual inquiry. Mere existence may be sustained by the minimal concern caricatured above. But real success—at least in the old-fashioned sense of genuine stature—requires serious engagement with the deep and difficult issues of both magisteria. The magisteria will not fuse; so each of us must integrate these distinct components into a coherent view of life. If we succeed, we gain something truly “more precious than rubies,” and dignified by one of the most beautiful words in any language: wisdom.

I have advanced two primary claims in designating my conception of the proper relationship between science and religion as NOMA, or non-overlapping magisteria: first, that these two domains hold equal worth

and necessary status for any complete human life; and second, that they remain logically distinct and fully separate in styles of inquiry, however much and however tightly we must integrate the insights of both magisteria to build the rich and full view of life traditionally designated as wisdom. Thus, before presenting some examples (in this chapter's more concrete second half) to anchor the generalities of this first section, I must defend these two key claims about NOMA in the face of an evident challenge inherent in the structure of my foregoing argument.

1. EQUAL STATUS OF THE MAGISTERIA. I am a scientist by profession and a theological skeptic and nonparticipant by confession (as stated on page 8, whatever my sincerely expressed fascination for religion as a subject). Am I truly practicing what I preach about equal and ineluctable status for both magisteria, when one consumes my life, but the other only piques my interest? In particular, how can I defend a professed respect for religion when I seem to denigrate the enterprise by two clear implications of the foregoing discussion? Why shouldn't readers view me as just another arrogant scientist, hypocritically claiming noninterference based on deep respect and affection while actually attempting to demote religion to impotence and inconsequentiality?

As a first implication for potential suspicion, I have

stated that, while every person must formulate a moral theory under the magisterium of ethics and meaning, and while religion anchors this magisterium in most cultural traditions, the chosen pathway need not invoke religion at all, but may ground moral discourse in other disciplines, philosophy for example. If we all must develop a moral code, but may choose to do so without a formal appeal to religion, then how can this subject claim equal importance and dignity with science (which cannot be similarly ignored unless a person truly believes that each step might launch him into outer space rather than force a gravitational return of foot to ground)?

Returning to a previous example, T. H. Huxley reported his distress upon hearing a standard line in the Anglican burial service suggesting that a belief in resurrection serves as a necessary prod for decent behavior during our earthly life:

As I stood behind the coffin of my little son the other day, with my mind bent on anything but disputation, the officiating minister read, as a part of his duty, the words, "If the dead not rise again, let us eat and drink, for tomorrow we die." I cannot tell you how inexpressibly they shocked me . . . What! because I am face to face with irreparable loss, because I have given back

to the source from whence it came, the cause of a great happiness, still retaining through all my life the blessings which have sprung and will spring from that cause, I am to renounce my manhood, and, howling, grovel in bestiality? Why, the very apes know better, and if you shoot their young, the poor brutes grieve their grief out and do not immediately seek distraction in a gorge.

But note that Huxley here attacks a specific claim within a particular tradition, not the concept of religion itself. When he says, later in the same letter, that "a deep sense of religion" is "compatible with the entire absence of theology," he must have been thinking about this example. A magisterium, after all, is a site for dialogue and debate, not a set of eternal and invariable rules. So Huxley, in these statements, joins a debate within the magisterium of religion about the moral value of good deeds. He surely stands outside the magisterium of science—and even makes claims later recognized as incorrect in his one citation of a supposed fact (about the grieving of apes) to illustrate a position that can only be decided by moral discourse (the greater value of actions based upon consistent principles rather than feared consequences). Huxley, the supposed scourge of God, is evidently quite content to base his

rejection of a rote Christian doctrine on a higher principle that he accepts as religious in essential nature. So let us acknowledge the necessity and centrality of dialogue within this magisterium (on vital questions that science cannot touch), and not quibble about the labels. I will accept both Huxley's view and the etymology of the word itself—and construe as fundamentally religious (literally, binding us together) all moral discourse on principles that might activate the ideal of universal fellowship among people.

As a second and more general implication, am I not more subtly denigrating the entire magisterium of ethics and meaning (or whatever name we choose) by implicitly stating that moral questions cannot be answered absolutely, while only a fool would deny the revolution of planets or the evolution of life? On this point we can only return to the principle of apples and oranges—that is, to NOMA itself. This inaccessibility to absolute resolution must be viewed as a logical property of the form of discourse itself, not as a limitation. (The vitality of this magisterium lies largely in the transcendent importance of moral issues, and questions of meaning, for all thinking and feeling people, not in the style of available resolution—based more on compromise and consensus in this magisterium than on factual demonstration, as in the magisterium of science.) One might as well denigrate the magisterium of science be-

cause its powerful offspring, technology, can perform such wonders, while all the resources of this great magisterium can hardly cast a flicker of light upon the oldest and simplest ethical questions that have haunted people since the dawn of consciousness.

2. INDEPENDENCE OF THE MAGISTERIA. How can anyone take this vaunted claim for non-overlapping magisteria seriously when the last few centuries of human history can virtually be defined by claims for deep and inherent conflict between these domains—from the evangelist (and former baseball star) Billy Sunday, who stated that any minister believing in evolution must be “a stinking skunk, a hypocrite and a liar” to Disraeli's rather more eloquent appeal:

The question is this—Is man an ape or an angel? My lord, I am on the side of the angels. I repudiate with indignation and abhorrence the contrary view, which is, I believe, foreign to the conscience of humanity . . . Man is made in the image of his Creator—a source of inspiration and of solace—a source from which only can flow every right principle of morals and every divine truth . . . It is between those two contending interpretations of the nature of man, and their consequences, that society will have to

decide. Their rivalry is at the bottom of all human affairs.

The resolution of this key question will occupy the second half of this book (effectively all of chapters 3 and 4), so I must defer discussion until then. For now, and as a placeholder in the logic of my argument, I will only state that I am trying to analyze the inherent logic of a case, as viewed with some historical distance from the heat of most intense and immediate battle—and that I am not making any claim about the realities of our intellectual and social histories. (I should also reiterate, as stated up front in the beginning of my Preamble, that NOMA represents a long-standing consensus among the great majority of both scientific and religious leaders, not a controversial or idiosyncratic resolution.) In brief, and as a caricature of an epitome for this book's second half, no institution ever gives up turf voluntarily. The magisterium of science is a latecomer in human history. *Faute de mieux*, theology once occupied this realm of factual inquiry as well. We can hardly expect anyone to withdraw from so much territory without a struggle—no matter how just and true the claim may be that such an apparent retreat can only strengthen the discipline.

Finally, how far apart do the magisteria of science and religion stand? Do their frames surround pictures at

opposite ends of our mental gallery, with miles of minefields between? If so, why should we even talk about dialogue between such distantly non-overlapping magisteria, and of their necessary integration to infuse a fulfilled life with wisdom?

I hold that this non-overlapping runs to completion only in the important logical sense that standards for legitimate questions, and criteria for resolution, force the magisteria apart on the model of immiscibility—the oil and water of a common metaphorical image. But, like those layers of oil and water once again, the contact between magisteria could not be more intimate and pressing over every square micrometer (or upon every jot and tittle, to use an image from the other magisterium) of contact. Science and religion do not glower at each other from separate frames on opposite walls of the Museum of Mental Arts. Science and religion interdigitate in patterns of complex fingering, and at every fractal scale of self-similarity.

Still, the magisteria do not overlap—but then, neither do spouses fuse in the best of marriages. Any interesting problem, at any scale (hence the fractal claim above, meant more than metaphorically), must call upon the separate contributions of both magisteria for any adequate illumination. The logic of inquiry prevents true fusion, as stated above. The magisterium of science cannot proceed beyond the anthropology of

morals—the documentation of what people believe, including such important information as the relative frequency of particular moral values among distinct cultures, the correlation of those values with ecological and economic conditions, and even (potentially) the adaptive value of certain beliefs in specified Darwinian situations—although my intense skepticism about speculative work in this last area has been well aired in other publications. But science can say nothing about the morality of morals. That is, the potential discovery by anthropologists that murder, infanticide, genocide, and xenophobia may have characterized many human societies, may have arisen preferentially in certain social situations, and may even be adaptively beneficial in certain contexts, offers no support whatever for the moral proposition that we ought to behave in such a manner.

Still, only the most fearful and parochial moral philosopher would regard such potential scientific information as useless or uninteresting. Such facts can never validate a moral position, but we surely want to understand the sociology of human behavior, if only to recognize the relative difficulty of instituting various consensuses reached within the magisterium of morals and meaning. To choose a silly example, we had better appreciate the facts of mammalian sexuality, if only to avoid despair if we decide to advocate uncompromising monogamy as the only moral path for human so-

ciety, and then become confused when our arguments, so forcefully and elegantly crafted, fare so poorly in application.

Similarly, scientists would do well to appreciate the norms of moral discourse, if only to understand why a thoughtful person without expert knowledge about the genetics of heredity might justly challenge an assertion that some particular experiment in the controlled breeding of humans should be done because we now have the technology to proceed, and the results would be interesting within the internal logic of expanding information and explanation.

From Mutt and Jeff to yin and yang, all our cultures, in their full diversity of levels and traditions, include images of the absolutely inseparable but utterly different. Why not add the magisteria of science and religion to this venerable and distinguished list?