Creation Research Society Quarterly 2014. 51:31–39.

Beyond "Origin & Operation" Science, Part II: An Alternative

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Abstract

Because the concepts behind the terms "origin science" and "operation science" are deficient in defending a Christian view of science and history from secular positivism, an alternative scheme is suggested that accommodates a traditional Christian view of truth. In contrast to origin and operation science, we suggest that: (1) *origins* (properly defined) is a question of metaphysics, (2) the study of the *past* is the domain of history, and (3) *science* addresses present phenomena and timeless rules of nature. Interdisciplinary investigations like *natural history* or *historical science* are best addressed as "mixed questions."

Introduction

Trials in Arkansas (MacLean vs. Arkansas, 1982) and Louisiana (Edwards vs. Aguillard, 1987) about teaching creation in the public schools were decided in favor of secularists primarily based on claims that evolution was "science" and creationism was "religion." In response, several Christian thinkers (Geisler, 1983; Geisler and Anderson, 1987; Thaxton et al., 1984) proposed different kinds of science, including origin, operation, historical, and supranormal (Figure 1) and that evolution and creation both fall within the bounds of origin science. This approach has become popular among creationists, although they typically use only two of the proposed types of science—origin science and operation science (OS^2). In Part I of this series (Reed and Klevberg, 2014), we critiqued this scheme and found it deficient in several areas. At its foundation, proponents of OS^2 looked for an answer *within* science, rather than using theology and philosophy to define the proper sphere of science as well as its relationship to truth and to other relevant disciplines.

If the main problem between Christian and secular worldviews concerns the nature of truth and knowledge, particularly the secular epistemology of positivism, then looking for an answer inside science implicitly grants that positivism to some extent. This leads to a number of other problems. These include the weakness of the criteria that support origin science, the inferiority of the dual dichotomies (past vs. present and regularities vs. singularities) that define the four sciences, the mistaken belief that science can address primary cause (God's creative acts) or singularities in the past, an insufficient understanding of uniformity and uniformitarianism, and a mistaken support of methodological naturalism and the "god-of-the-gaps" fallacy. Finally, while the authors emphasized the history of science, they did not adequately reflect recent work (e.g., Stark, 2003, 2005) that has shown that many of the secular accounts of the history of science consist of anti-Christian myths centered on a narrative of a "war" between "science and religion." In reality, Christianity gave birth to science, not in a seventeenth-century "revolution,"

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Accepted for publication September 16, 2014

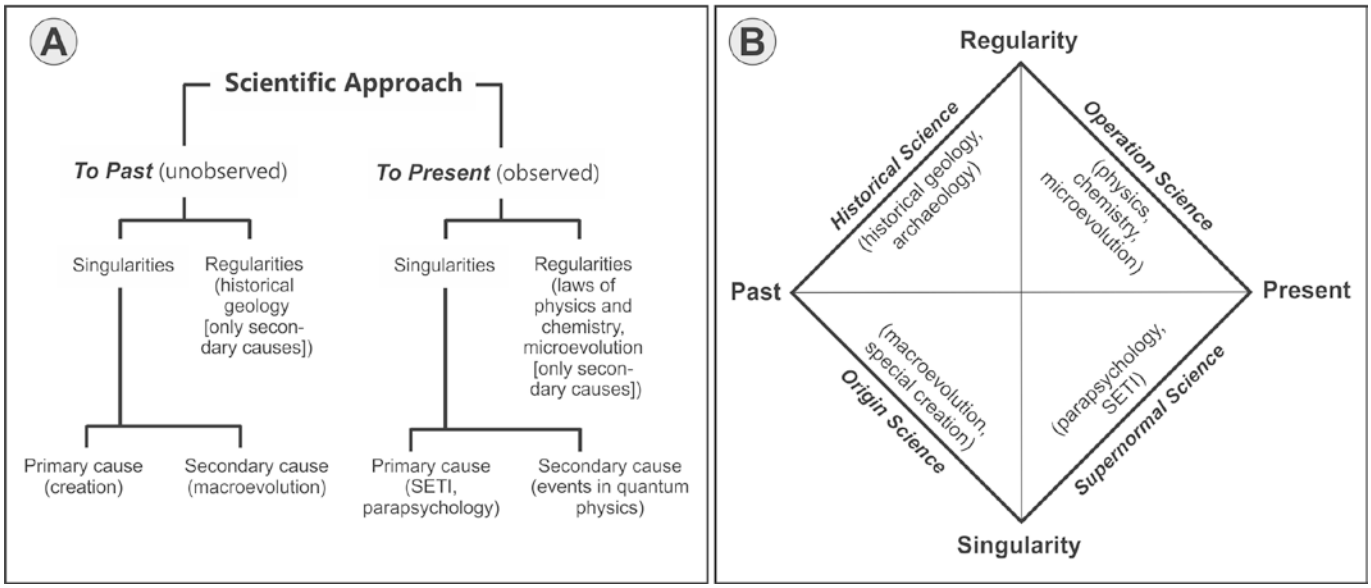

Figure 1. Geisler and Anderson (1987) derived four kinds of science basted on their classification criteria of past vs. present and regularity vs. singularity. Modified from Geisler and Anderson (1987, their figures 1 and 2).

but in the medieval university system of the church (Glover, 1984; Stark, 2005).

If OS[2] is not the best answer to one of the most enduring secular strategies in the origins debates, then another is needed. It must look beneath the history and philosophy of science to the competing worldviews that supply essential axioms of truth and reality. Because Christianity and naturalism are contrary in their metaphysics, epistemology, and philosophy of history (Reed, 2001), then we must dig deeper to define science (and other disciplines) in a way that is consistent with Christian worldview axioms, acknowledging, in particular, the primary source of truth as being revelation rather than science.

An Alternate View of Science and History

Because science is the child of Christianity, it is like a fish swimming in those life-giving waters. Remove the water, and the fish dies. Enlightenment secularism dragged science part way out of the water, and the part that remained was due only to the unconscious retention of Christian presuppositions, such as the intelligibility of nature to man (Reed, 2001). That was why there was common ground between creationists and evolutionists during the twentieth century. Though they could not agree on origins, they could agree that science was a means of discovering objective truth about nature. But recent decades have seen the rise of postmodern relativism and nihilism. Those variations of secularism will complete the task of destroying science as it has been known. They present a window of opportunity for Christians to demonstrate that truth is possible and can be known in part by science. But that involves putting it back in its rightful place—undergirded by revelation and surrounded by other disciplines that can know truth inside their own boundaries. Science thus faces the options of humbling itself or being destroyed. We propose a means to achieve the former, consistent with Christianity.

First, truth must be guaranteed. Christianity does so by revelation from an omniscient God who cannot lie. If naturalism and postmodernism are self-refuting (Lisle, 2009, 2010; Reed, 2001, 2012), revelation is the only alternative. The Bible was the foundation that built the West and its science (Mangalwadi, 2012). Debates over methods, boundaries, and practical uses appear less daunting if truth is the focus. Second, Christians must restate the foundational links between science and theology (e.g., Reed and Williams, 2011, 2012), despite secular dismissals of theology and faith. Only theology can justify the axioms and ethics necessary for science. Secularists have always wanted the benefit without the intellectual or ethical costs, but that happy inconsistency will not survive postmodernism.

Since science is not the autonomous benchmark of truth, it must recede to its rightful role. It is an amazing branch of knowledge—no more and no less—a discipline with its own distinct methods, questions, and objects of inquiry. Many

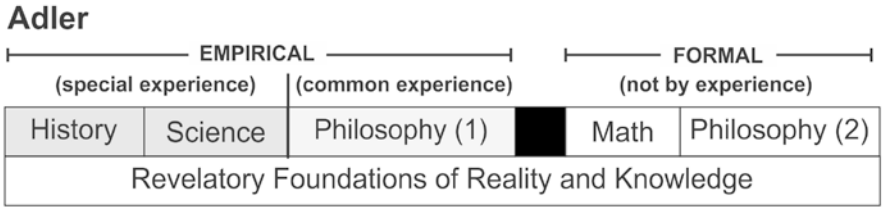

Figure 2. Adler's (1965) definition of the disciplines provides better demarcation criteria than OS². He distinguished history, science, mathematics, first-order philosophy, and second-order philosophy. When combined with the assertion that all true human knowledge rests on revelation, this scheme provides a workable alternative to positivism.

clever schemes to define science as something more have come and gone. They all fail at the point of rejecting revelation as the basis for truth. Furthermore, most were unnecessary; it seems to have been a characteristic of modern thought that every generation wishes to jettison the past and build a new system from the ground up.

We propose a tentative alternative that fits the Christian worldview and avoids the pitfalls of secular philosophy of science. It is based on the work of Adler (1965) and modified to explain its implicit Christian presuppositions. It avoids many unnecessary quandaries of positivists and relativists. Better options may exist, and we welcome that discussion. But no solution can work that does not recognize (1) God is the source of truth; (2) man, created in God's image, can find truth; (3) the world, created by God, can be comprehended by man; (4) fallen man has an innate bias against truth; and (5) truth is grounded in revelation.

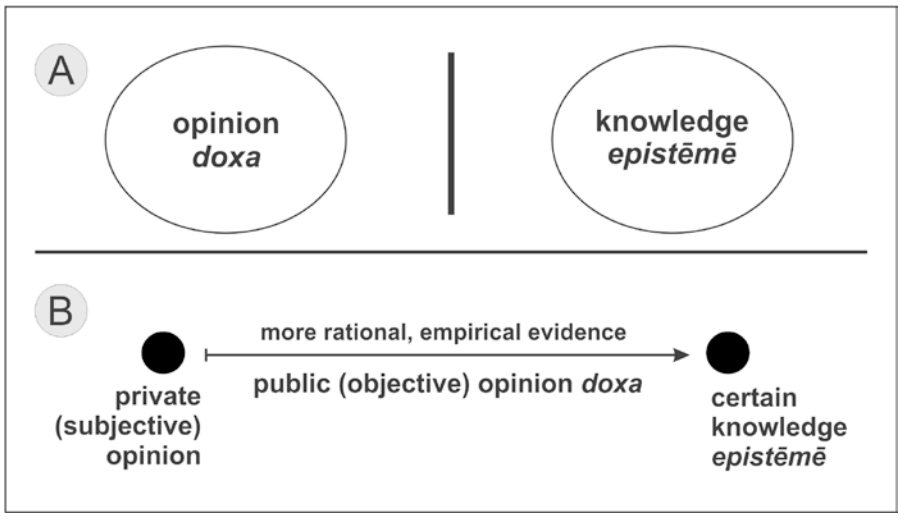

Figure 3. Knowledge and opinion are not mutually exclusive, true and false capacities of the mind (A) but can be seen as a spectrum of public increasing truth, distinct from both private opinion and sure and certain knowledge (B). See Adler (1965) for an extended discussion. From Reed and Klevberg (2014).

There is no objective ground for science apart from Christianity. This was the crucial point missed by Geisler and Anderson (1987). In the three decades since OS² was proposed, continued secular attacks (often irrational) against biblical truth in any form (YEC or ID) have demonstrated the need for a more robust Christian response.

How Science Fits

With this added explicit foundation of revelation, Adler's (1965) division of knowledge (Figure 2) is superior to OS². It provides better criteria for defining disciplinary boundaries, it notes crucial distinctions missed by Popper and other traditional secular philosophers of science, and it proposes a simple way to address exceptions and avoid the tendency to rebuild the house at the first sign of a leak. Finally, its more modest definition of science begins solving the demarcation problem and other "intractable" issues of secularism.

Adler (1965) wrote about philosophy, but his criteria for successful philosophy can be applied to science. He said that philosophy (or science) should:

1. Be an "autonomous branch of knowledge in the form of testable, falsifiable *doxa*" (p. 79). Both *doxa* and *espistēmē* are valid knowledge (Figure 3). The latter is "certitude beyond the challenge of skeptical doubts … finality beyond the possibility of revision … necessary truths" (pp. 23–24), while *doxa* is a more moderate knowledge. It is "testable by reference to evidence … subject to rational criticism, and either … corrigible and rectifiable or …falsifiable" (p. 28).
2. Propose "theories or conclusions [that] should be capable of being judged by a standard of truth, to which appeal can be made in adjudicating disagreements" (p. 79).
3. Conduct inquiries as a "public enterprise" (p. 79) with ground rules to guide debate toward truth.

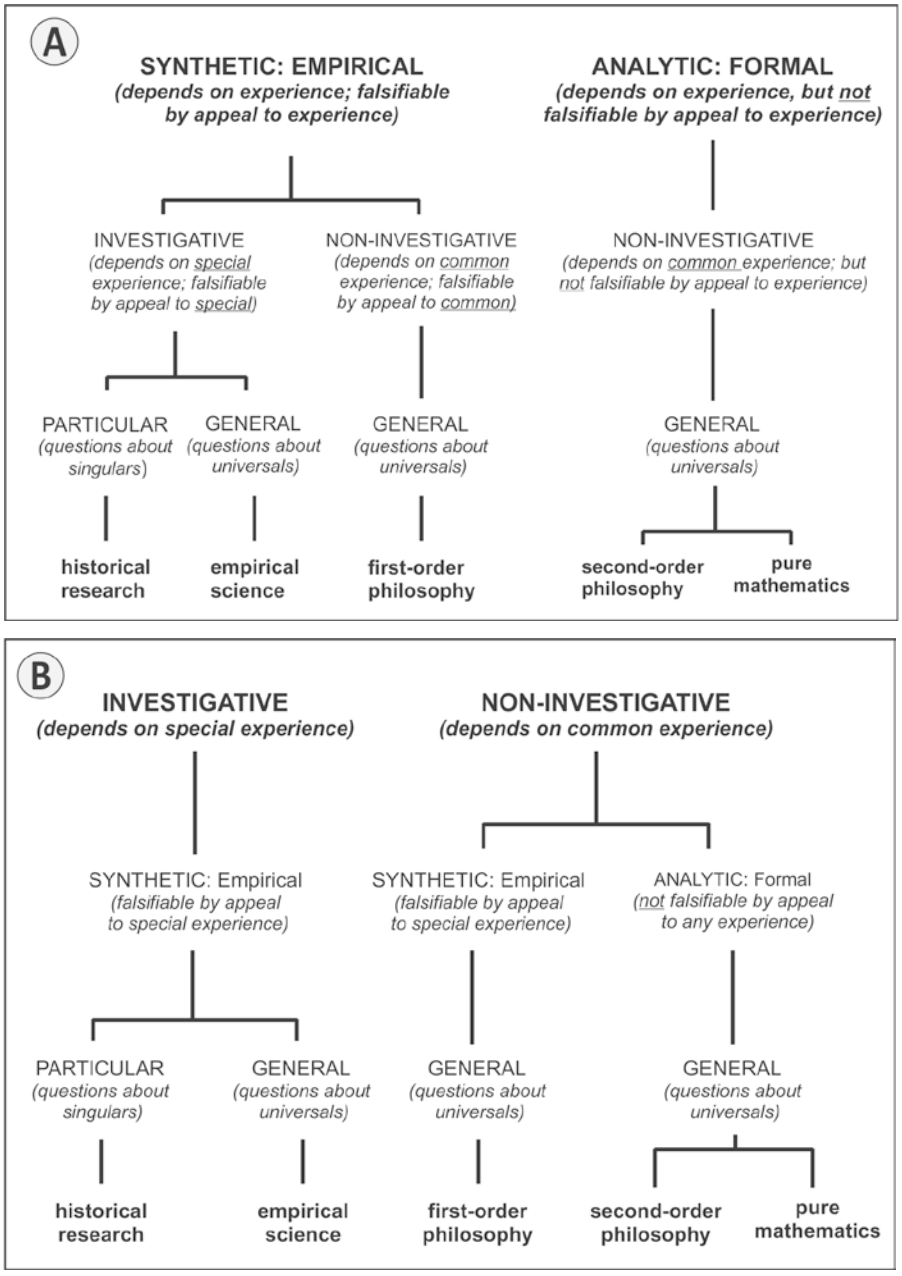

Figure 4. Adler (1965) subdivided human knowledge based on two sets of criteria: synthetic vs. analytic (A) and investigative vs. non-investigative (B) to emphasize the crucial distinction between common experience and special experience. Though primarily concerned with the role of philosophy, his division of human knowledge is superior to that of OS².

4. Be a branch of knowledge with "questions of its own (on which its autonomy is based)" (p. 79). These "questions" are conjoined with its own "objects of inquiry" and "methods."

Adler (1965) uses two primary dichotomies to differentiate disciplines (Figure 4). The first is *synthetic* (empirical) vs. *analytic* (formal) knowledge. Math and second-order philosophy are *analytic*, while science, history, and first-order philosophy are *synthetic*. Empirical knowledge is further divided by *special experience* vs. *common experience*. The former is "experience we have as the result of investigative efforts on our part, *and only as the results of such efforts*" (Adler, 1965, p. 102, emphasis his). Common experience includes "all the experiences we have without any effort of investigation on our part. These are the experiences we have simply by virtue of being awake—with our senses alive and functioning, with an awareness of our inner feelings or states, but *without* asking any questions, *without* trying to test any conjectures, theories, or conclusions, *without* making a single deliberate effort to observe anything" (pp. 102–103).

The second primary dichotomy is that between *investigative* knowledge—based on special experience—and *non-investigative* knowledge—based on common experience (Figure 4B). Investigative knowledge leads to science or history, depending on whether the questions answered are specific or general, and non-investigative knowledge includes philosophy and mathematics. This is quite different from OS², which uses the dichotomies of past/present, and regularities/singularities. These do not explicitly distinguish science from history but only "operation science" from "origin science" and "historical science" (Figure 5).

History and science are both deliberate investigative knowledge, but science is the present-day investigation of "natural law," while history investigates singular past events. Recent developments of geohistory, biohistory, and cosmohistory challenge this arrangement. Positivism claims all are "sciences," with no distinction between past and present (e.g., Cleland, 2013). OS² answered this challenge by subdividing science. Adler (1965) assigned science per se to the present but recognized that there were questions that required a cooperative effort of two or more disciplines. Instead

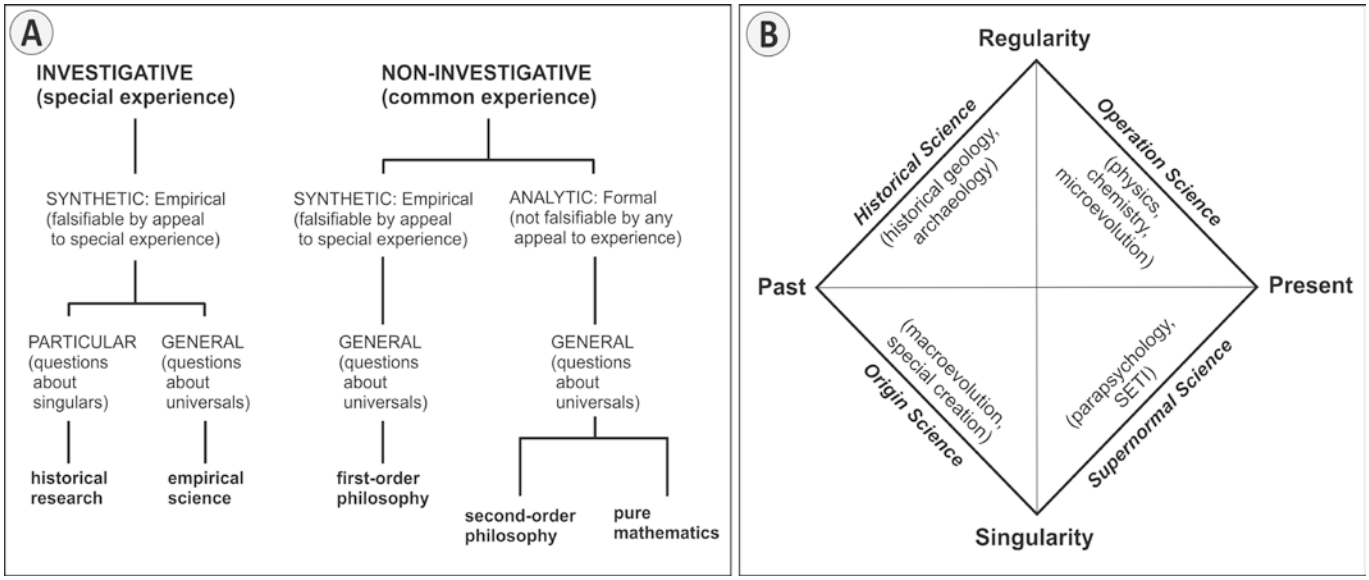

Figure 5. Comparison of Adler's (1965) criteria for defining disciplines (A) and Geisler and Anderson's (1987) divisions into four types of science based on "past vs. present" and "regularity vs. singularity." Note that Adler rejects the possibility that science can be defined as investigation of particulars.

of trying to rearrange the basic divisions, he treated them as a separate category, which he called "mixed questions." But before we discuss them, we must show where the topics included in OS^2 fit within this proposed scheme.

It is worth noting an important difference between the objective and subjective definitions of science. Starting with Kuhn (1962), a number of philosophers of science have advocated eliminating objective, ideal definitions of science and concentrating instead on defining science by the practice of scientists. This has led some (e.g., Bauer, 1992) to assert that there is no scientific method or that it is impossible to determine demarcation criteria (e.g., Laudan, 1983). This is a problem for secular thinkers, who have no absolute basis for normative truth or for normative standards of ethics. Christianity recognizes that mankind lives in the tension of existing both in the image of God and as fallen creatures. It explains why we can have normative standards and yet not live up to them. In a similar way, it explains why there is the *potential for*, but not the *guarantee of*, objective truth in science. The diminishing influence of Christianity on intellectuals parallels the rising relativism of the postmodern age.

An ability to define science is essential to a correct understanding of how it interacts with history, philosophy, theology, and revelation. These, in turn, correct the misunderstandings inherent to secular positivism, as well as those in OS^2. Therefore, we will explore the place of origins and earth history relative to science. While OS^2 would have us think that these areas are amenable to their individual arenas of science, we suggest that they are not.

Study of Origins Is Theology/Metaphysics

Metaphysics is "the study of being or reality" (Geisler and Feinberg, 1980, p. 432). The term is associated with Aristotle—his *metaphysics* are the heart of his work (McKeon, 1941). The word originated in the first century BC with Andronicus and means literally "after physics" or "beyond physics."

> Aristotle himself described his subject matter in a variety of ways: as 'first philosophy', or 'the study of being qua being', or 'wisdom', or 'theology.' (Cohen, 2012)

Over time, the term acquired shades of meaning from different schools of philosophy, and finally, following Hume, it was widely rejected as valid knowledge. But the claim that metaphysics was not valid knowledge did not magically make its questions disappear. Adler thought that metaphysics included

> philosophical questions about that which is and happens in the world … the nature of being and existence; the properties of anything which is; the modes of being and the types of existence; change and permanence in being or mutability and immutability; the existence of that which changes; change itself and the types of change; causation and the types of causes; necessity and contingency; the material and the

> immaterial; the physical and the non-physical; freedom and indeterminacy; the powers of the human mind; the nature and extent of human knowledge; the freedom of the will. (In addition to such purely philosophical questions, there is a host of mixed questions—questions about the nature of man, about society, and about history—the answer to which depend in part upon scientific and historical knowledge). (Adler, 1965, p. 43)

Clearly, the topic of origins is included. The dead ends of modern philosophy have not eradicated metaphysics; they show only that man moving away from revelation loses confidence in the truth he does know. Since the Bible describes origins, it is at the heart of the issue. Contrary to atheists' assertion that their view is pure science, *denial* of God as the Creator is also a metaphysical statement.

What do we mean by *origins*? On one hand, it refers to the ultimate source of existence, whether through *ex nihilo* divine creation or a materialistic big bang. But it is commonly misused as shorthand for a whole range of questions and debates about earth history, human history, and cosmology. This equivocation is not helpful, and so we propose to use *origins* in its most definite sense—ultimate beginnings. Origins answers the famous question, "Why is there something, instead of nothing?"

In that sense, it is metaphysics, not "origin science." It deals with the ultimate origin of matter, energy, space, and time, as well as the rules that govern them and their axioms. Is matter eternal, self-existing, or an artifact? Is there a universal mind? If so, is it intrinsic to matter, or does it transcend the physical? What rules govern the behavior of matter and energy in space and time? How do we justify them? These are all questions that have to do with "the nature of being and existence; the properties of anything which is … change and permanence in being … causation and the types of causes … the material and the immaterial" (Adler, 1965, p. 43).

Options	Implications	True or False	Consequences
(1): Phenomena are illusions	Science and history are unreliable.	Falsified by both logic and experience; ends in solipsism	Rejected by Christianity & naturalism since solipsism is contrary to both
(2): Universe is self-created	Logic is unreliable, thus science is impossible	Falsified by logic	Implied by Big Bang and naturalism, but impossible if logic tests truth
(3): Universe is eternally self-existent	Thermodynamics contradicts an absolute continuity & uniformity	Falsified by logic and experience	Implies extreme systems of uniformity or falsifies science and common experience
(4): Created by eternally self-existent entity	No violations of logic or experience; contrary only to naturalism	Does not violate logic or experience	Excludes naturalism for theism. Biblical version provides foundation for science and history.

Figure 6. Sproul et al. (1984) presented four options for the origin of the universe. The first two are excluded by logic, leaving the views of naturalism and Christianity competing for acceptance of explaining ultimate origins.

Christians should be comfortable in this mode of thinking. God's completed work of Creation and His ongoing work of providence mean that the supraphysical permeates reality, something taken for granted in the early days of science. Today, questions of origins have degenerated into arguments for or against God's existence, arguments Christians have faced for millennia. Classical arguments from Creation to Creator, justified by Romans 1:20, include the cosmological and teleological arguments for God, often associated with Thomas Aquinas (1225–1274), and the ontological argument of Anselm (1033–1109). These were largely abandoned after Kant, although Paley (1802) restated the teleological argument, and a few theologians and philosophers have argued against Kant (e.g., Sproul et al., 1984).

These debates seem out of place in "origin science." But the question of ultimate reality—God or matter—underlies any "scientific" discussion of origins. One of the problems with "origin science" is that it (1) accepts the broader, equivocal use of the term and (2) violates the spirit of Christian theology by restricting basic questions about beginnings to scientific specialists. God can be known by *everyone* through creation.

Ultimately, there are a limited number of logically valid explanations for the origin of the cosmos. Sproul et al. (1984) presented four contemporary ideas but eliminated two as logically invalid (Figure 6). Thus, the choices are special creation or the eternality of matter/energy.

A few centuries ago, asserting that the origin of the world was a metaphysical question would have been met with a yawn. Hume and Kant began a successful war to eliminate theology and first-order philosophy. Philosophical systems replaced theology, and then science replaced philosophy. Now, postmodern nihilism scoffs at all three. Only Christian revelation stands firm, even when

individual Christians do not. We reject both positivism and nihilism. Christian revelation built Western culture, and those who would condemn its faults never consider the actual (as opposed to fantastical) alternatives (Mangalwadi, 2012; Stark, 2005). Adler's (1965) proposal sets metaphysics (his "first-order philosophy") as an empirical branch of knowledge, distinct from science in its use of common experience rather than special experience. But in terms of its truth potential, it is every bit as valid as science.

Study of Past Events Is History

On the surface, secularists accept history as a distinct discipline but use a unique definition to set it in a position inferior to science. Until the late 1700s, it was assumed that history was the study of man's past, and since man was assumed to be coequal in age to Earth, little thought was given to "natural history." In the 1700s, Enlightenment secularists who rejected the Bible began assuming Earth was much older. This challenged the chronologies that were at the heart of history, and secularists resorted to the inelegant, arbitrary, and imprecise solution of dividing "history" from "natural history" by the point in time at which human civilization appeared. History was no longer defined by its distinct questions, methods, and objects of inquiry. The older, prehuman past became the subject of science.

OS^2 retains this confusion; their creation of "historical science" (to investigate past regularities) and "origin science" (for past singularities) still assumes "scientific" prehistory, which is the basic flaw. In contrast, we assert that history is a separate branch of knowledge, defined by its unique questions, methods, and objects of inquiry. History includes *all* of the past, not part. For creationists, this is less of a problem because man is essentially coequal in age to the cosmos. Thus, natural history is merely a subset of history or a mixed question (see below), parallel in time to human history (Reed, 1999). Past singularities belong to empirical history; although historians often *speculate* about generalities, their historical "regularities" remain less certain than those of science.

Significant differences exist between science and history. One is the method. Instead of things that can be repetitively observed under controlled circumstances, knowledge of the past is indirect, based on eyewitness accounts (Deuteronomy 19:15) and forensic evidence. Regular processes can be inferred assuming uniformity but cannot be proven. Furthermore, the eyewitness accounts of the Bible testify to miracles of creation and providence. Thus uniformity is not absolute. Most historical knowledge is *doxa* (Figure 3B) and relies on logical and empirical evidence. Because scientific knowledge is based on repeated confirmation and the testing of variables, it often moves higher on this scale. The conclusions of history are usually less certain (though not necessarily less true), and history faces interpretive bias, especially when speculative templates built on bias (e.g., the "Dark Ages") are unquestioned. However, Geisler's (1983) four criteria of "origin science" causality, uniformity, consistency, and comprehensiveness, are all equally applicable to history outside of OS^2.

The issue of certainty should drive Christians back to revelation. It imparts truth to history through (1) meaning and purpose, (2) a framework, and (3) sufficient accounts to provide a baseline for empirical studies (Reed, 1999). Recognizing the greater certainty of science, secular intellectuals set the two in opposition to each other to attack the Bible. They did so indirectly at first, advocating a prehuman prehistory. Once deep time was accepted, the challenges became more direct, to the point of outright dismissal of the Bible and its God in the twentieth century. Today's secular venom toward Creation illustrates that a biblical history attacks the foundation of secularism (Mortensen, 2004).

The line between science and history has grown admittedly more difficult to draw. Recent decades have seen a rise in technology applied to forensic methods in history. Eyewitness accounts are dismissed, while forensic data are glorified (Reed, 2008). Although ephemeral success cannot mask axiomatic failures, how are Christians to view natural history?

First, and foremost, we must stand firm on revelation. We reject the path of OS^2 for two reasons. The first is the distinction between the *tools* of an investigation and its *domain*. For example, a statistical study of census data using a computer and spreadsheet is done. Is it computer science, statistics, or anthropology? It has elements of all. But the object of inquiry was political redistricting based on population gains or losses. Even though statistical and computing *tools* were used, the *domain* of the investigation was politics.

In the same way, forensic tools are often used to answer historical questions. While the forensic work per se may be scientific, the domain of the investigation is history. This is because the objects of inquiry are physical phenomena in the present, and the questions the data are being marshalled to address are questions about events in the past. This raises the question of how to proceed when *questions* of science and history both seem involved. Positivism defaults to "science." OS^2 agrees but calls it a different kind of science. Both are awkward, and we propose that Adler's (1965) commonsense suggestion of "mixed questions" can minimize the problems these questions raise.

Mixed Questions

Secularism succeeded in capturing the West largely because its epistemology of positivism was able to define natural history as science. Most of the church has agreed; only biblical creationists fight for Genesis. Geology, evolutionary

biology, and cosmology are the bulwarks of secular natural history. It seems odd, then, that creationists would promote a scheme that leaves the basic positivist assertion in place.

If the primary concern is that of truth, then apparent conflicts between revelation and science must be addressed, and not on the playing field of positivism. That allows the quantity of data or some initially compelling narrative to give science the victory. But if science itself is dependent on revelation for its very existence, a different perspective emerges. While the cliché that "all truth is God's truth" is based in fact, the corollary of the priority of special revelation (the Bible) over general revelation (nature) is often lost. Creationists have shown that many of the so-called conflicts between the Bible and science are easily resolved by simply reexamining the evidence or the logical chain of interpretation.

With these caveats in mind, we recognize that natural history (among other questions) is neither strictly historical nor strictly scientific. It is one of Adler's (1965) "mixed questions" in which history, science, philosophy, theology, and revelation all play roles. Mixed questions may at first appear to blur the boundaries of the disciplines, but they actually preserve them, by preventing unnecessary and complicated redefinitions of the boundaries:

> Just as philosophy has pure and mixed questions, so do history and science. The solution of a problem that is a mixed question for science and history may involve a combination of scientific and historical knowledge and a combination of the methods of both disciplines. This would hold true for most of the problems in "natural history" which occur in such sciences as geology and paleontology. (Adler, 1965, p. 107)

Human knowledge is as complex as human beings. It does not always fit into simple templates. Mixed questions (Figure 7) provide a way to address complications at disciplinary boundaries without scrapping everything and starting over. Positivism rejects mixed questions because if everything worth knowing is some kind of science, then there are no boundaries to worry about. Drawing boundaries also raises the question of the basis for doing so, allowing revelation to reenter the picture.

Figure 7. Allowing mixed questions (shaded areas) as distinct areas of investigation allows investigations at the boundaries of various disciplines without wasteful, confusing battles of demarcation criteria. Such questions are common and typically handled as a matter of course. However, the rise of positivism usually resulted in science taking over, rather than contributing to, such investigations. Origins (wide sense) and natural history are both mixed questions; origins in the narrow sense is metaphysical. Earth's history overlaps all four of these disciplines, as well as being addressed by revelation.

Creationism is the practical application of mixed questions to natural history. It admits knowledge from the Bible, theology, philosophy, science, and history. Positivism is a simplistic attempt to displace truth with science. OS^2 fails to address this anti-Christian aspect of positivism and is thus not suitable as a creationist explanation of science. Christian foundations must be restored. Clarifying the nature of science and the distinct roles of history, philosophy, and theology is a start. From these, the practical development of a better basis and method in all areas of knowledge can proceed.

Conclusions

Although superior to the pure positivism of the secular worldview of naturalism, the Christian alternative of OS^2 advocated by Geisler, Thaxton, and Anderson is not a satisfactory alternative. It does point to a necessary emphasis on the history and philosophy of science, but it fails to follow to conclusions in both areas that invalidate naturalism. Since science is the child of Christianity, its axioms are justified only by a biblical worldview. This requires more fundamental revision than OS^2. Furthermore, the idea is flawed in several key areas. Its attempt to divide science into different disciplines to study both primary and secondary causes is shortsighted because science is methodologically capable of investigating primary cause. Philosophy and theology are better suited to answer metaphysical questions.

Furthermore, OS^2 is built on dual dichotomies (*past/present* and *regularities/singularities*) that do not provide a sufficient foundation for science. Geisler's (1983) criteria for "origin science" fail to distinguish that proposed science from any other investigative branch of human knowledge. Finally, OS^2 fails to address the problem of positivism in aggressively biblical categories, especially the relevant doctrines of creation and providence. For these reasons, we: (1) affirm that ultimate origins of the universe and life is a metaphysical question, and we believe, (2) that questions about unique past events are the domain of history and (3) that science is essentially what OS^2 advocates would call "operation science." Therefore, we recommend that creationists avoid that terminology and work to reconstruct valid, biblical criteria for

science and history. We also commend Adler's (1965) mixed question concept as a fruitful way to conduct and justify natural history research.

References

CRSQ: Creation Research Society Quarterly

Adler, M.J. 1965. *The Conditions of Philosophy*. Athenaeum Press, New York, NY.

Bauer, H.H., 1992. *Scientific Literacy and the Myth of the Scientific Method*. University of Illinois Press, Urbana and Chicago, IL.

Cleland, C.E. 2013. Common cause explanation and the search for the "smoking gun." In Baker, V.R. (editor), *Rethinking the Fabric of Geology*, pp. 1–10, Geological Society of America Special Paper 502, Boulder, CO.

Cohen, S.M. 2012. Aristotle's metaphysics. In Zalta, E.N. (editor), *The Stanford Encyclopedia of Philosophy* (Summer 2012 Edition), http://plato.stanford.edu/archives/sum2012/entries/aristotle-metaphysics/ (accessed October, 2013).

Geisler, N.L. 1983. *Is Man the Measure: An Evaluation of Contemporary Humanism*. Baker Book House, Grand Rapids, MI.

Geisler, N.L., and J.K. Anderson. 1987. *Origin Science: A Proposal for the Creation-Evolution Controversy*. Baker Book House, Grand Rapids, MI.

Geisler, N.L. and P.D. Feinberg. 1980. *Introduction to Philosophy: A Christian Perspective*. Baker Book House, Grand Rapids, MI.

Glover, W. 1984. *Biblical Origins of Modern Secular Culture*. Mercer University Press, Macon, GA.

Kuhn, T. 1962. *The Structure of Scientific Revolutions*. University of Chicago Press, Chicago, IL.

Laudan, L. 1983. The demise of the demarcation problem. In Cohen, R.S., and L. Laudan (editors), *Physics, Philosophy, and Psychoanalysis*, pp. 111–128. Reidel, Dordrecht, Holland. [Reprinted 2009 in Ruse, M., and R. Pennock (editors), *But Is It Science*? pp. 312–330. Prometheus Books, New York, NY.

Lisle, J. 2009. *Ultimate Proof of Creation*. Master Books, Green Forest, AR.

Lisle, J. 2010. *Discerning Truth*. Master Books, Green Forest, AR.

Mangalwadi, V. 2012. *The Book that Made Your World: How the Bible Created the Soul of Western Civilization*. Thomas Nelson Publishers, Nashville, TN.

McKeon, R. (editor). 1941. *The Basic Works of Aristotle*. Random House Publishers, New York, NY.

Mortenson, T. 2004. *The Great Turning Point*. Master Books, Green Forest, AR.

Paley, W. 1802. *Natural Theology*. R. Faulder, London, England.

Reed, J.K. 1999. Historiography and Natural History. *CRSQ* 37:160–175.

Reed, J.K. 2001. *Natural history in the Christian Worldview*. Creation Research Society books, Chino Valley, AZ.

Reed, J.K. 2008. Cuvier's Analogy and its consequences: forensics vs. testimony as historical evidence. *Journal of Creation* 22(3): 115–120.

Reed, J.K. 2012. Soft secularism is no solution: a critique of Rudwick's postscript in *Worlds Before Adam*. *Journal of Creation* 26(2): 25–29.

Reed, J.K., and P. Klevberg. 2014. Beyond origin and operation science, part I: critique of OS^2. *CRSQ* 50:237–251.

Reed, J.K., and E.L. Williams. 2011. Battlegrounds of natural history, part I: naturalism. *CRSQ* 48:147–167.

Reed, J.K., and E.L. Williams. 2012. Battlegrounds of natural history, part II: actualism. *CRSQ* 49:135–152.

Sproul, R.C., J. Gertsner, and A. Lindley. 1984. *Classical Apologetics: A Rational Defense of the Christian Faith and a Critique of Presuppositional Apologetics*. Academie Books, Grand Rapids, MI.

Stark, R. 2003. *For the Glory of God*. Princeton University Press, Princeton, NJ.

Stark, R. 2005. *The Victory of Reason: How Christianity led to Freedom, Capitalism, and Western Success*. Random House, New York, NY.

Thaxton, C.B., Bradley, W.L., and R.L. Olsen. 1984. *The Mystery of Life's Origin: Reassessing Current Theories*. Philosophical Library, New York, NY.