Reconsidering "The Conflict Thesis"

with James C. Ungureanu, "Relocating the Conflict between Science and Religion at the Foundations of the History of Science"; and Miguel de Asúa, "The 'Conflict Thesis' and Positivist History of Science: A View from the Periphery."

RELOCATING THE CONFLICT BETWEEN SCIENCE AND RELIGION AT THE FOUNDATIONS OF THE HISTORY OF SCIENCE

by James C. Ungureanu

Abstract. Historians of science and religion usually trace the origins of the "conflict thesis," the notion that science and religion have been in perennial "conflict" or "warfare," to the late nineteenth century, particularly to the narratives of New York chemist John William Draper and historian Andrew Dickson White. In this essay, I argue against that convention. Their narratives should not be read as stories to debunk, but rather as primary sources reflecting themes and changes in religious thought during the late nineteenth century. I contend that Draper and White were part of a long liberal Protestant heritage that emphasized history, reason, and religious emancipation against ecclesiastical authority. As an alternative source of origins, however, I suggest that the real "conflict thesis" is to be found in the fledgling discipline of the history of science as it emerged during the late nineteenth and first half of the twentieth century. The real origin of the "conflict thesis" is found in the very discipline that now seeks to condemn it.

Keywords: Auguste Comte; "conflict thesis"; John William Draper; history of science; logical positivism; new atheists; Protestantism; George Sarton; science and religion; Andrew Dickson White

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Since the 1980s historians of science and religion have argued that narratives about the "conflict" or "warfare" between science and religion were first fully articulated in the late nineteenth century, specifically among Anglo-American writers. They usually trace the origins of the "conflict thesis," the notion that science and religion are fundamentally and irrevocably at odds, to two nineteenth-century works—John William Draper's *History of the Conflict between Religion and Science* (1874) and Andrew Dickson White's

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A History of the Warfare of Science with Theology in Christendom (1896) (Colin Russell et al. 1974; Moore 1979; Lindberg and Numbers 1986a, 1986b; Numbers 2009; Numbers and Kampourakis 2015). As historians David Lindberg and Ronald Numbers argued in the mid-1980s, it was mainly the writings of Draper and White that instilled in the "public mind a sense of the adversarial relationship between science and religion" (1986a, 340). Draper and White are thus often accused of being "co-founders" of the "conflict thesis."

There is certainly some truth to the imposed designation. Draper's title alone seems to suggest that religion and science are caught in an endemic struggle. Moreover, Draper claimed that "it is not given to religions to endure for ever," and that it was "impossible that Religion and Science should accord in their representation of things." The final arbiter must be "reason," he declared, the "supreme and final judge." Draper even predicted that a "time approaches when men must take their choice between quiescent, immobile faith and ever-advancing Science—faith, in its medieval consolations, Science, which is incessantly scattering its material blessings in the pathway of life, elevating the lot of man in this world, and unifying the human race." Ultimately, the Church and science, Draper argued, are "absolutely incompatible; they cannot exist together; one must yield to the other; mankind must make its choice—it cannot have both" (Draper 1874, 327, 67).

While his approach was perhaps less antagonistic, White, as first president of Cornell University, delivered a lecture at the Cooper Union for the Advancement of Science and Art in New York in 1869, surveying the "The Battle-Fields of Science." Reviewing the "great sacred struggle for the liberty of science," White described one by one the battles fought in cosmography, astronomy, chemistry, anatomy, and geology. White cited, for example, the numerous "mistakes of the church"—its battle over the rotundity of the Earth and the debate over the existence of the antipodes; the position of the Earth among the heavenly bodies and the persecution of scholars dedicated to the cause of free inquiry; the theological objection and rejection of chemistry, physics, astronomy, medicine, and technology; and the humiliating trials faced by geologists earlier in the century. White concluded his onslaught by alluding to the criticism from clergy over the establishment of his beloved Cornell University (White 1876). For the next thirty years, White doggedly pursued this thesis in other lectures delivered in Boston, New Haven, Ann Arbor, Rhode Island, and elsewhere, before publishing an expanded version into two articles for the *Popular Science Monthly* in 1876 (White 1876a, 1876b). Soon thereafter these articles were revised and published under the title *The Warfare of Science* (White 1876c). White continued developing his original Cooper Union lecture into a series of articles entitled "New Chapters in the Warfare of Science," which were again published in the *Popular Science Monthly* between 1885 and

1895 (White 1885–1895). These articles were collected, reorganized, and amplified into a massive two-volume *History of the Warfare of Science with Theology in Christendom*, published in 1896. In these ponderous volumes, White described the disastrous role theologians played in the progress of science. Much like his original lecture, its twenty chapters teem with examples and illustrations of the warfare between science and theology, including battles over cosmology, biology, geography, astronomy, geology, chronology, anthropology, meteorology, chemistry, physics, medicine, philology, mythology, political economy, and biblical criticism (White 1896).

At the same time, we must appreciate the wider religious context in which such historical narratives appeared. Advances in the natural and historical sciences, whether intentional or not, seemed to many a direct assault on Christian belief. Debates about the character of religion fumed both inside and outside the church during the century, and out of these debates emerged new ways of thinking about the nature of Christian faith, the historical existence of Jesus, the character and authority of Scripture, the nature of the church, and the future of religion. While the nineteenth century was undoubtedly an intensely Christian era, it was also a time of much doubt and disillusionment (Altholz 1976; Larsen 2006). As scholar of religion Linda Woodhead has put it, the nineteenth century witnessed the "reinvention" of Christianity (Woodhead 2001). This new "reinvented" or "reformed" Christianity was part and parcel of nineteenth-century liberal Protestantism (Ungureanu, forthcoming-a, forthcoming-c). For the religiously liberal, there was an "acute sense of the need for a reformation of Christianity," an attempt to accommodate Christianity to the modern era (Woodhead 2001, 7). Recognizing that advances in the sciences and historical criticism had supposedly contradicted established religious ideas, many attempted to ameliorate the emerging malaise by readjusting or reconstructing the meaning of religion; that is, nineteenth-century liberal Protestantism generally responded to higher criticism and scientific naturalism by *transforming* rather than *abandoning* the faith. By the last decades of the century, the "New Theology" or "new religion" movement had found numerous supporters on both sides of the Atlantic (Person 1947; Dorrien 2001; Schmidt 2005).

What this new or freer religion looked like was, of course, deeply contested. But however it was conceived, many men and women in the nineteenth century believed that the reconciliation of science and religion depended on it. Significantly, one key strategy used by liberal Protestants and dissident intellectuals at the end of the century was turning "theology" into a pejorative. By contrasting the idea of a free, progressive scientific inquiry against the authoritative, reactionary methods of theology, religious liberals imagined dogma as an obstacle of modern thought, not faith. Thus "conflict" occurred, they believed, not between scientific truth and religious truth, but between contesting theological traditions. If religion would only

rid itself of dogmatism and ecclesiastical authority, science and religion would be in harmony. The distinction between, and separation of, religion from theology was thus extremely important—indeed, the future of religion depended on it. Many liberal Protestants believed the separation of religion from theology was the best approach to bridging the growing schism between modern thought and ancient faith, and thus for bringing about reconciliation between science and religion (Ungureanu, forthcoming-b).

A Long History of Contending Theological Traditions

The separation of religion from theology of course antedates the late nineteenth century. In seventeenth- and eighteenth-century England, theologians and natural philosophers attempted to establish a more "rational" foundation for Christian belief. These Protestants promoted a "reasonable" creed against the superstition and irrationality of Puritan enthusiasts and Catholics alike. Recourse to reason had thus become a litmus test. Knowledge of the natural and the supernatural came from the use of reason, and for a growing group of intellectuals reason and religion developed a holy alliance. This attitude toward reason and religion reached its high-water mark in the teaching and writings of the so-called Cambridge Platonists, a loose-knit group of divines which included men like Benjamin Whichcote (1609–1683), Henry More (1614–1687), Ralph Cudworth (1617–1688), John Smith (1618–1652), Nathaniel Culverwell (1619–1651), and others. Whichcote, considered to be the founding father of the Cambridge Platonists, believed that "to go against Reason, is to go against God." Like the other men of the Cambridge school, he wished to save religion from the dogmas and religious enthusiasm of his day. For Whichcote, God constantly revealed himself in nature. The function of Scripture is thus to confirm the truths already present in the light of nature. "The written word of God," he wrote, "is not the first or only discovery of the duty of man. It doth gather and repeat and reinforce and charge upon us the scattered and neglected principles of God's creation." God had established two lights to guide mankind: the light of reason was the light of creation; the light of Scripture was God's revelation. "Let us make use of these two lights," Whichcote concluded, "and suffer neither to be put out" (Whichcote 1703).

Whatever their differences, this band of Cambridge men rejected the exclusive claims of tradition and Scripture and believed that human beings have a natural knowledge of God. In an age of strident theological controversy, they attempted to take a moderate view, expressing the ultimate compatibility between faith and reason. They uniformly pursued the reformation of religion along more rationalistic lines. In prose, sermons, and poems, they declared that external forms were unimportant, and that religion should be pared down to the essentials. They therefore underplayed dogmatism and opposed superstition, enthusiasm, and

fanaticism. Concomitantly, they also placed more emphasis on the inner spiritual light than on outward rules of worship and propositional beliefs. The rational theologies of the Cambridge Platonists put an emphasis on the relationship between core religious doctrines, natural law and a personal divine providence, with evidence for this intrinsic relationship to be found in the ideas already present in the mind, in the natural world, in the associated records or observations of the experimental philosophers, and in history. "Religion" for the Cambridge Platonists referred to primarily a "rational Christianity" of some kind, particularly a rational Protestantism (Patrides 1969; Gascoigne 1989).

The ideas expressed in the writings of the Cambridge Platonists formed a vital link to subsequent developments in English thought. Numerous scholars have also noted the close association between the Cambridge Platonists and English Latitudinarian divines, who similarly sought to minimize doctrinal discord by emphasizing human reason in understanding revelation. Indeed, the tendencies of the Cambridge Platonists found fuller expression in the rational theology of the Latitudinarians, which included such men as William Chillingworth (1602–1644), John Wilkins (1614–1672), Simon Patrick (1626–1707), Isaac Barrow (1630–1677), John Tillotson (1630–1694), Edward Stillingfleet (1635–1699), Joseph Glanvill (1636–1680), and Gilbert Burnet (1643–1715), among others (Shapiro 1968; Marshall 1985; Spurr 1988; Griffin 1992; Spellman 1993). Tillotson, a skilled preacher at Lincolns Inn and later Archbishop of Canterbury, was perhaps the most effective communicator of the Latitudinarian message. In a sermon on "The Wisdom of God in the Creation of the World," for instance, Tillotson argued that to see God's wisdom and goodness in creation one must examine his works. He went on to briefly survey the latest scientific findings in astronomy, geology, zoology, and human anatomy. According to Tillotson, all of this had a purpose, which was for the service and pleasure of mankind. And while he ended this sermon declaring the folly of the atheist, he also took the opportunity to criticize Christians for not being more interested in creation: "It is a great fault and neglect among Christians, that they are not more taken up with the works of God, and the contemplation of the wisdom which shines forth in them" (Birch 1820). By the end of the seventeenth century, latitudinarianism was pervasive among Anglican clergymen.

The Latitudinarians considered their rational theology both a defense against atheism and a deliberate attempt at integrating the new science with traditional religious thought. The increasing "mechanization" of nature during the eighteenth century provided new visions of God and, concomitantly, new "physico-theological" treatises. Writers such as Walter Charleton (1619–1707), Robert Boyle (1627–1691), John Ray (1627–1705), Isaac Barrow (1630–1677), Christopher Wren (1632–1723), Robert Hooke (1635–1703), Richard Bentley (1642–1726), Isaac

Newton (1642–1727), Samuel Clarke (1675–1729), William Whiston (1667–1752), William Derham (1657–1735), and many others believed the new natural philosophy could be used in defense of Christianity. However, as with the Cambridge Platonists and the Latitudinarians, these so-called "English virtuosi" sought to demonstrate not only how God has revealed himself in nature, but how a more "rational" Protestantism provided an atmosphere more conducive to the sciences (Dillenberger 1961; Westfall 1970; Hooykaas 1972; Webster 1975; Jacob 1976).

This development can be demonstrated particularly well in the work of philosopher John Locke (1632–1704), perhaps the foremost English "rational supernaturalist" at the end of the seventeenth century. Locke, who once considered becoming a clergyman, epitomized the intellectual outlook of his age and shaped that of the next. Locke's interest in religious and theological issues was not only deep and extensive, it was also central to his thought. Indeed, as Victor Nuovo has recently argued, Locke's philosophy of religion completed his philosophical program, unifying all his major works (Nuovo 2017, 215). In his *Essay Concerning Human Understanding* (1690), for example, Locke argued that the existence of God is "the most obvious truth that reason discovers"—that is, "evidence" is "equal to mathematical certainty" (Locke 1824). For Locke, however, reason not only provided proof of the existence of God, it also established the criteria to judge what counted as genuine revelation. Reason judges what is and is not authentic revelation. That is, for revelation to be accepted, Locke argued, it must be subject to reason. "Whatever God hath revealed is certainly true," he wrote, "but whether it be a divine revelation, or no, reason must judge." He added that "nothing that is contrary to, and inconsistent with, the clear and self-evident dictates of reason, has a right to be urged, or assented to as a matter of faith, wherein reason hath nothing to do."

It is important to point out that the emphasis on reason and nature shifted the focus of religion away from sin, grace, and redemption. Reason and nature thus came to overshadow revelation in many respects. But the rational theology of the Cambridge Platonists, Latitudinarian divines, and English natural theologians would eventually come to undermine the very reasonableness of orthodox Christianity itself. Indeed, English rational theology of the seventeenth century laid the foundations for the deistic critique of revelation in the eighteenth century (Taylor 2007). In their polemic with Rome and the Puritan enthusiasts, these rational theologians attempted to construct a rational theology capable of gaining the reasoned consent of an impartial examiner. Deism was merely the logical development of this principle. Rather than limiting the true faith to those fundamental doctrines shared by all Christians, the English deists simply broadened the perspective and located "true faith" in the "religion of nature"—that is, in those basic rational beliefs supposedly shared by all men in all ages.

As Peter Gay aptly put it, "Liberal Anglicanism and the dawning deist Enlightenment were connected by a thousand threads" (Gay 1995, 327).

Thus, when the English deists first appeared, they had an abundant selection of Protestant rhetorical strategies and natural theologies which supported their critique of orthodox Christianity. With a more diffusive Christianity emerging, such men as Edward, Lord Herbert of Cherbury (1583–1648), Charles Blount (1654–1693), Matthew Tindal (1656–1733), Thomas Woolston (1669–1733), John Toland (1670–1722), Anthony Collins (1679–1729), Thomas Morgan (d. 1743), Thomas Chubb (1679–1747), Conyers Middleton (1683–1750), and Peter Annet (1693–1769) promoted a noninstitutional, and therefore nonpartisan and nondogmatic, "natural religion." These deists consistently condemned revealed religion in general and Christianity in particular. They argued that miracles and doctrines such as the divinity of Christ, the Resurrection, and the Trinity were irrational. Moreover, they argued that sacred Scripture was full of legends, self-contradictions, and nonsense. More still, they also criticized what they saw as the immorality of Christianity. They insisted that the church was an oppressive social institution that obtained its power by intimidation. They also rejected the doctrine of original sin as offensive to both reason and moral sensibilities.

But as Justin Champion (1992), S. J. Barnett (1999, 2003), Jeffrey R. Wigelworth (2009), Wayne Hudson (2009), and Hudson et al. (2014) have argued, the English deists were neither atheists nor even deists in an exclusive or final sense. Most of the English deists in fact denied that sobriquet. The English deists did, of course, reject the Athanasian Creed and denied the divinity of Christ. They reduced religion to what they regarded as its most foundational, rationally justifiable elements. But so did Protestants. What is clear, then, is that these men had taken the views of the Cambridge Platonists, Latitudinarians, and English natural theologians to their logical conclusions. They extended the Protestant historical and rational critique against Catholicism to Anglicanism and argued that all hierarchical established churches should be replaced with a non-institutional "natural religion." When abandoning the church for deism or natural religion in the late 1690s, the English deists simply extended Protestant historiography to include most or all of Christianity. For such thinkers all hierarchical established religion had been and still was priestcraft, instituted by the clergy for gain, and thus advocated a noninstitutional, private belief in God.

At the dawn of the nineteenth century, the English tradition of natural theology culminated in Archdeacon William Paley's (1743–1805) trilogy, *Principles of Moral and Political Philosophy* (1785), *A View of the Evidences of Christianity* (1794), and *Natural Theology; Or, Evidences of the Existence and Attributes of the Deity, Collected from the Appearances of Nature* (1802). Paley believed these works contained "the evidences of Natural Religion,

the evidences of Revealed Religion, and an account of the duties that result from both" (Paley 1813). Thus, like the "rational theologians" before him, Paley argued that contrivance proves design. And like his predecessors, Paley's religious views inclined toward liberalism. Indeed, one may read his *Natural Theology* as Paley's efforts to reconcile liberal Christianity with divine providence (LeMahieu 1976).

In subsequent decades a host of Victorian scientists, dissident intellectuals, radical Dissenters or Nonconformists, and even liberal Anglicans sustained in their language strong traces of a Protestant polemic against superstition, corruption, authority, and even apostasy from what they believed was the true message of Christ. Figures as diverse as George Combe (1788–1858), Robert Chambers (1802–1871), Francis W. Newman (1805–1897), James Martineau (1805–1900), William R. Greg (1809–1881), Thornton Leigh Hunt (1810–1873), George Henry Lewes (1817–1878), George Eliot (1819–1880), Arthur P. Stanley (1815–1881), Charles Kingsley (1819–1875), Charles Voysey (1828–1912), John Robert Seeley (1834–1895), William E. H. Lecky (1838–1903), and even the scientific naturalists John Tyndall (1820–1893), Herbert Spencer (1820–1903), and Thomas H. Huxley (1825–1895) distinguished theology from religion in the hope that the new discoveries in the natural and historical sciences would bring about a "New Reformation" in religion (Ungureanu, forthcoming-a).

The controversy surrounding discussions over the "New Reformation" of religion is reflected in the public response to Draper and White (Ungureanu, forthcoming-b). Indeed, Draper and White themselves must be placed within the wider religious changes occurring in the century. While the majority of scholarly opinion has pitted Draper and White as antagonists rather than harmonizers, a closer reading of their respective works demonstrates a more nuanced position. It is often mentioned, but left unanalyzed, that Draper's *History of the Conflict* was largely a compilation and condensation of previously published works. Most importantly, Draper had published his *History of the Intellectual Development of Europe* in 1863, and here he made a crucial distinction that most historians of science have forgotten or simply ignored. In discussing the so-called "paganization" of Christianity, for example, Draper emphatically distinguished between Christianity and "ecclesiastical organizations." "The former," he wrote, "is a gift of God; the latter are the product of human exigencies and human invention, and therefore open to criticism, or, if need be, to condemnation." He also contended that the paganization of Christianity had resulted in the "tyranny of theology over thought," and declared that those "who had known what religion was in the apostolic days, might look with boundless surprise on what was now ingrafted upon it, and was passing under its name." Even his notorious *History of the Conflict*, under closer inspection, continues to make such distinctions, as when he argued that he would only

consider the "orthodox" or "extremist" view, and not the moderates. He even expressed concern that "traditionary faith" was leading the "intelligent classes" to give up on religious faith entirely. His narrative was thus intended to show that the decline of religious faith was a direct consequence of orthodox Christianity, not science (Draper 1863, 198, 382–402; 1874, v-xvi).

White shared much of the same sentiments in his historical narratives. History showed, according to White, that "interference with Science in the supposed interest of religion, no matter how conscientious such interference may have been—has resulted in the direst evils both to Religion and Science, and *invariably*." But by separating religion from theology, White could announce that the "most mistaken of all mistaken ideas" was the "conviction that religion and science are enemies." While science has conquered "dogmatic theology," he argued, it will "go hand in hand with Religion." For White, science was an aid to religion, encouraging its "steady evolution" into more purified forms (White 1876, 7–10; 1896, 1.v-xii, 410).

But the liberal Protestant reformulation of religion was a risky strategy that ultimately backfired. A new generation of religious skeptics and unbelievers saw such liberal attempts at reformulating the idea of God and religion as gratuitous and unnecessary. Perhaps the most important secularist to have arrogated Draper and White, and liberal Protestant historiography in general, was Joseph McCabe (1867–1955). A Roman Catholic monk who abandoned his religious beliefs around 1895, McCabe wrote over 200 books on science, history, and religion. A vehement advocate of atheism, McCabe frequently forecast the doom of Christianity in light of modern science. In his massive and important *Biographical Dictionary of Modern Rationalists* (1920), McCabe included both Draper and White in his tribute. McCabe also published an extremely popular pamphlet on *The Conflict between Science and Religion* (1927), where he essentially repeated elements of the narratives of both Draper and White. But unlike them, McCabe gleefully cheered on the decay of religion all over the world. Future historians, he argued, will look back with amusement at those men of science and theologians of his own century who protested that there was no conflict between religion and science. "He will read the priests protesting," he wrote, "that there is no conflict between true science and religion, and the professors plaintively chanting that there is no conflict between science and true religion." But according to McCabe, the historians of the future will recognize that "science has, ever since its birth, been in conflict with religion." Indeed, the vast majority of McCabe's "Little Blue Book" was a diatribe against "progressive religion." Ironically, he repeated the same arguments of conservative and orthodox opponents of Draper and White, calling liberal Protestantism the "veriest piece of bunk that Modernism ever invented." According to McCabe, those liberal theologians who reinterpreted traditional religious belief, wittingly or unwittingly, attacked the very foundations of Christianity. The modernists, McCabe

concluded, "are Christians who believe that Paul and the Christian Church have been wrong in nearly everything until science began to enlighten the world."

Thus, in a remarkable twist of irony, both orthodox believers and radical unbelievers found themselves in concord. If theology was found unbelievable or unnecessary, so must be religion. The narratives of liberal Protestant thinkers were, in short, appropriated by skeptics, who reshaped them to justify and promote their own specific vision of a progressive and secular society. Skeptics near the end of the nineteenth century and the beginning of the twentieth century declared war not only on traditional religious believers but on what McCabe caustically described as the "land of bunk," those obfuscating liberal religious thinkers who attempted to accommodate theology to fit the modern age. Writers for leading secularist publications imagined the progress of science as sweeping away all manifestations of religious belief. Religion was an illusion and therefore detrimental to the progress of society.

Locating the True Origins of the "Conflict between Science and Religion"

The secular progressivism or humanism of skeptics like McCabe deeply informed the fledgling discipline of the history of science as it developed in the early twentieth century. Indeed, by mid-century, when the history of science first emerged as an academic field of study, the belief that "science and religion" were in a constant state of conflict or warfare was held as a commonplace. Its leading advocates adhered to a European positivist outlook, exemplified in the writings of such men as Paul Tannery (1843–1904), Charles Singer (1876–1960), and especially George Sarton (1884–1956), at one time the doyen of all historians of science (Clark 2016). These early historians of science viewed scientific advance as the progressive triumph of reason over primitive superstition. They believed that positive scientific knowledge would replace earlier religious forms of understanding. History of science, in short, became the heart of secular faith in the progress and improvement of humanity.

Perhaps more than anyone it was the Belgian émigré Sarton who helped establish the history of science as a serious academic profession. The German invasion of Belgium in 1914 forced Sarton to relocate to Britain and then to the United States, where he lived for the remainder of his life. Often called the "dean" or "father of the history of science," Sarton wrote what many still consider the foundational works in the field, including his massive five-volume *Introduction to the History of Science* (1927–1948), *The History of Science and the New Humanism* (1931), *The Study of the History of Science* (1936), *A History of Science* (1952–1959), and *Horus: A Guide to the History of Science* (1952), among numerous articles and other writings.

Sarton was also the founder in 1912 and first editor of *Isis*, perhaps the most important peer-reviewed academic journal on the history of science, medicine, and technology. In 1924, the History of Science Society was established for the specific purpose of furthering the study of the history of science as well as an international source of financial support for Sarton's work (Brasch 1925; Cohen 1999; Numbers 2009). In 1936, Sarton also founded *Osiris* to relieve *Isis* of the load of longer, more sustained studies. In 1940, he became a professor of the history of science at Harvard University and was instrumental in making its program there one of the leading centers of the history of science in the world (Conant 1957). But his influence extended beyond Cambridge, particularly in the History of Science Department at the University of Madison-Wisconsin, which was one of the largest and oldest academic programs of its kind in the United States (Hilts 1984). Thus, the professionalization of the history of science as a discipline was carried on in the United Stated largely by Sarton.

But by the second half of the twentieth century, historians of science such as Alexandre Koyré, Charles Gillispie, John Greene, and numerous others were calling attention to the variety of connections between religion and scientific thought. As Thomas S. Kuhn and others have observed, while historians of science owe Sarton an immense debt for his role in establishing their profession, "the image of their specialty which he propagated continues to do much damage even though it has long since been rejected" (Kuhn 1977, 146). Indeed, Leslie Pearce Williams (1960) complained that Sarton's view of history was a "painfully naïve" division of "good guys" and "bad guys," of "good practices" and "bad practices." A. C. Crombie (1959) also wrote that "a hard critic might even say that Sarton's approach could easily have killed the study of the history of science." What needs to be emphasized here is that Sarton's vision of the history of science as the "new humanism" grew directly out of his commitment to Comtean positivism. Arnold Thackray and Robert Merton (1972), for example, have stated that what controlled Sarton's argument and guided his actions stemmed from a heritage of "positivism, progressivism, and Utopian socialism." Tore Frängsmyr (1973–1974) more aggressively argued that the kind of history of science Sarton promoted was "born out of the confident belief in progress of French Positivism." More recently, John F. M. Clark (2016, 159) suggests that Sarton "built on eighteenth- and nineteenth-century traditions of positivism and universal history."

Sarton's dependence on positivist philosophy is unmistakable. French philosopher Auguste Comte (1798–1857), widely considered the first modern philosopher of science, envisioned science as a singular and unified entity that would replace older conceptions of knowledge and reality. In his vastly influential *Course of Positive Philosophy* (1830–1842), Comte articulated a tripartite law of human progress. He argued that "each of our leading conceptions—each branch of our knowledge—passes successively

through different theoretical conditions: the Theological, or fictitious; the Metaphysical, or abstract; and the Scientific, or positive" (Comte 1896). In the first stage, which he further divided between fetishism, polytheism, and monotheism, Comte explained that humanity attributed observable phenomena to divine agents, eventually progressing to a view of a single God as an explanation for all forces in nature. In the second stage, which Comte believed was only transitional, divine agents and an anthropomorphized God were transformed and replaced with philosophically abstract ideas such as force and energy. In the final, positive stage, humanity would explain all phenomena by theories based on reason, observation, hypothesis, and experiment. In this sense, conflict between science and religion are prolonged historical battles that science is destined to win. The positive stage will thus supersede both theological and metaphysical explanations, abandoning them as futile. Comte believed that "the phases of the mind of a man correspond to the epochs of the mind of the race," and that history demonstrated that man was a "theologian in his childhood, a metaphysician in his youth, and a natural philosopher in his manhood."

Comte had many slavish imitators. Since positivism was grounded with historical argumentation, a significant number of prominent British intellectuals and historians endorsed positivism, including Harriet Martineau, John Stuart Mill, George Eliot, Georgy Henry Lewes, Frederic Harrison, Richard Congreve, Edward Caird, E. B. Tylor, and many others. It is also important to point out that Comte's altruistic views had also greatly influenced liberal Anglicans. Benjamin Jowett, Andrew M. Fairbairn, Brooke F. Westcott, John Tulloch, and Christian socialists Frederick D. Maurice and Charles Kingsley felt compelled to reconstruct their theology based on positivist principles. Across the Atlantic, American transcendentalists and radical liberal Protestants Ralph Waldo Emerson, Theodore Parker, Joseph Henry Allen, Thomas Hill, James Walker, William Henry Channing, Francis Ellingwood Abbot, Octavius B. Frothingham, and Thomas Wentworth Higginson replaced orthodox Christianity with a humanistic theism influenced by Comte's writings.

But it must be stressed that most nineteenth-century Anglo-American writers "fused Comte's thought with parts of other systems." That is, there were many "Comtean" philosophies that meant different things to different people. As Charles Cashdollar observes, "normally positivism was allowed to stand as an emblem for modern thought—that vague and imperfectly understood collection of ideas from which conservatives sought deliverance and with which liberals hoped for peace" (1989, 16, 181). In short, the influence of Comte's positivism among Anglo-American readers was largely the result of it acquiring "broader" meaning (Harp 1995).

It should also be pointed out that Comte's "stages" or periodization of history was unoriginal. Comte no doubt was influenced by the conception of progress found in the writings of Turgot, Saint-Simon, Fourier, and other

"prophets of Paris" (Manuel 1962, 249–96). But as Christopher Dawson (2001), Ernest L. Tuveson (1949), Karl Löwith (1949), and Robert Nisbet (2009), among others, have shown, the idea of historical progress, the notion of an unfolding, cumulative advancement of mankind through stages or epochs, each reflecting some historic civilization or cultural development advancing by social reform and conflict, has a long Christian pedigree—particularly among Protestant historians and theologians. Indeed, Protestant historiography of reformation, reason, and religious emancipation from Rome gradually transformed into a narrative of the progressive demystification of the world. Comte's own aim was the reform of society. He believed the French Revolution had destroyed the old social and political system. Every effort to establish a new stable system had failed. Comte ascribed these failures to lack of understanding of the laws that govern the dynamics of society. As early as the 1820s, Comte called on the "new high priest[s] of humanity"—that is, men of science—to replace Christianity and install a "New Religion of Humanity" (Comte 1974, 182–213).

Comte's "Religion of Humanity" is exemplified in Sarton's call for a "New Humanism." Sarton was baptized in the Roman Catholic Church for his "mother's sake," who died only a few months later. He was thus raised by a father who seems to have altogether neglected him (May Sarton 1995, 15; Pyenson 2006). Moreover, his father cared little for religion, and, as result, Sarton never "received the Holy Communion and never practiced any definite religion" (Cohen 1957, 286). While studying at the University of Ghent, Sarton became familiar with the work of Austrian physicist, philosopher, and positivist Ernst Mach (1838–1916), who in his *The Science of Mechanics: A Critical and Historical Account of Its Development* (1883) claimed that the "conflict" between science and theology, or science and the church, was a "commonplace of history" (Mach 1919, 446; Siemsen 2012, 2013).

Sarton's disdain for religion is evident in the majority of his writings. As a committed Comtean positivist, he viewed the gradual decline of religion as a mark of scientific progress. Indeed, his *Isis* was designed to spread the message of the positivists. In its opening article, for example, Sarton readily admitted that his work adhered to the positivist school of Comte. He explicitly stated that Comte must be considered the "founder of the history of science." Unsurprisingly, then, he argued that "the interaction between science and religion has often had an aggressive character," and that "most of the time a real warfare" had existed between them. He found much heuristic value in this conception of the history of science. It reveals not only the "progress" of the human mind but also its "regressions," "sudden halts," "mishaps," and "superstitions," thus providing us with a "history of errors." The "progress of mankind," Sarton asserted, was an "intellectual unfolding." Sarton accorded science a preeminent place in the scale of human knowledge and mapped the "progress of civilization" through the history of science. In short, he wrote,

> [T]he purpose of the history of science, as I understand it, is to establish the genesis and the development of scientific facts and ideas, taking into account all intellectual exchanges and all influences brought into play by the very progress of civilization. It is indeed a history of human civilization, considered from its highest point of view. The center of interest is the evolution of science, but general history remains always in the background. (George Sarton 1916, 333)

The spirit of Comte could not be more alive than in statements such as these. While he blithely asserted that Comte was "crazy," he nevertheless praised his Positivist Calendar as a "remarkable document." On at least one occasion in 1919, Sarton even spoke at Richard Congreve's (1818–1899) "Church of Humanity" on Chapel Street in London. Some thirty years later, Sarton also visited Comte's "*domicile sacré*" in Paris and "communed" with his hero's spirit (George Sarton 1952a). Thus, while he seemed to have dissociated himself from the Religion of Humanity, Sarton nevertheless seemed to think it appropriate that Comte was worthy of veneration.

Sarton's campaign, then, was launched under the aegis of positivism. For Sarton, the history of science unequivocally demonstrated the progress of humanity. The purpose of teaching the history of science, he declared, was to establish a "New Humanism" (George Sarton 1918, 1920, 1921, 1924, 1930). The "true humanist," he wrote, "must know the life of science as he knows the life of art and the life of religion." He must not only "appreciate and admire what our ancestors did" but also must "take up their best traditions" (1920). According to Sarton, "scientific activity is the only one which is obviously and undoubtedly cumulative and progressive." In addressing the matter of opposition or hostility to science from religious and "conservative people," he admitted that such groups were "undoubtedly right in their distrust and hatred of science, for the scientific spirit is the very spirit of innovation and adventure—the most reckless kind of adventure into the unknown. And such is its aggressive strength that its revolutionary activity can neither be restrained, nor restricted within its own field." He added that "sooner or later it will go out to conquer other fields and to throw floods of light into all the dark places where superstition and injustice are still rampant." The scientific spirit, he said, "is the greatest force for construction but also for destruction." Sarton summarized these views in a pithy statement:

> The history of science is the story of an endless struggle against superstition and error; it is not a vivacious and spectacular struggle, but rather an obscure one—obscure, tenacious and slow. The resistance of science against every form of unreason or irrationality is so firm and yet so quiet, that it is almost as gentle as non-resistance would be, yet unshakable. (George Sarton 1956, 10, 43–48, 179)

Sarton believed that men of science are heroes fighting for truth against the forces of darkness. The enemies are religion and superstition in every

shape and form, and the heroes of science have to fight with reason as their weapon. "The history of science," he contended, "cannot be an end in itself, but a means to a higher end: a deeper understanding of science, of nature, of life." All of this, according to Sarton, advances the New Humanism. Whereas the "old humanism" was the "revival of ancient knowledge," the "New Humanism is a revival of the knowledge patiently elaborated and accumulated for many centuries by men of science." This leads Sarton to the remarkable conclusion that "men without scientific knowledge are totally unfit to explain the progress of humanity" (1924). Sarton was, then, a propagandist of the "new humanism"—and by "new" he undoubtedly meant "secular."

In line with his endorsement of positivism and his unequivocal commitment to a secularized ideology of progressive humanism, Sarton accepted the idea that a gradual and increasing separation from religion marked the progress of science. In his *Introduction to the History of Science* (1927), for instance, he dismissed the "superstition and magic" that prevailed in his day. "The historian of science," he wrote, "cannot devote much attention to the study of superstition and magic, that is, of unreason, because this does not help him very much understand human progress." He added that "human folly being at once unprogressive, unchangeable, and unlimited, its study is a hopeless undertaking." Thus the history of science must always be considered under two aspects, he said, "either positively as the gradual unfolding of truth, the increase of light, or negatively as the progressive triumph over error and superstition, the decrease of darkness." Ultimately, he argued that "the progress of science is absolutely dependent upon its emancipation from non-scientific issues, whatever they be, and in particular, upon its laicization." Therefore the history of science, Sarton proclaimed, "is the history of mankind's unity, of its sublime purpose, of its gradual redemption" (1927, 19, 25, 28, 32).

As the gatekeeper of the incipient history of science discipline, Sarton also decided who and what was important to the field. Censorship was a common complaint by authors trying to publish in his journals. For instance, when Sarton offered to publish Robert Merton's work, he asked him—rather curiously—to reduce his discussion of religion. Merton, who described his relationship with Sarton as the "exigent and angry master and I the brooding and unruly apprentice," was astonished when Sarton asked him to condense his section on religion, a striking proposal indeed since Merton's presentation of Puritanism in relation to the rise of science became the most celebrated part of his monograph. However, as Merton (1985) recollected, "this part was not condensed in the published version."

Sarton relied on the work of countless others in constructing his narrative of the history of science. He listed many of them in his widely acclaimed *Guide to the History of Science*, which was a bibliographic reference guide for scholars interested in the history of science. Significantly,

in a section devoted to early "treatises and handbooks on the history of science," Sarton cited Draper's *History of the Conflict* and White's *History of the Warfare* as important guides to the whole subject (1952b, 118, 121). As his younger contemporary, Sarton had actually developed something of a personal relationship with White. In the English reprint of his opening article for *Isis*, for example, he recommended to his readers White's two-volume masterpiece (1916, 339). Sarton had invited White to be a patron of *Isis* in 1912 and had even visited White at Cornell in 1916 (Thackray and Merton 1972, 485). Further, in desperation Sarton wrote White several times in 1918, appealing to him for support in securing an appointment with the Carnegie Institution, to which White was a trustee. Whether it was White's support or some other, Sarton was eventually appointed as "research associate" of the Carnegie Institution, which enabled him to devote full attention to his scholarship (see the appendix).

It is also worth noting that Sarton and other twentieth-century positivists informed the work of the Unity of Science movement, associated particularly with the logical positivists or empiricists of the Vienna Circle. Established in 1922 shortly after the Great War, philosophers of science such as Otto Neurath (1882–1945), Moritz Schlick (1882–1936), Hans Hahn (1879–1934), Rudolf Carnap (1891–1970), Hans Reichenbach (1891–1953), Carl Gustav Hempel (1905–1997), and many others, all insisted that science and religion occupy separate nonoverlapping domains. According to their verificationist theory of meaning, the logical positivists argued that religious or metaphysical beliefs refer to unobservable entities, and as such lack meaning altogether. Hence, positivism not only distinguishes between science and religion, it does so on grounds that deny objective warrant to religious belief. While their approach was mainly philosophical, the logical positivists issued encyclopedic projects similar in scope to Sarton's, such as the *International Encyclopedia of Unified Science*, of which some twenty volumes were published between 1937 and 1969. Progressive, liberal, and sometimes socialist, these volumes presented a disenchantment model of scientific progress (Reisch 1994). Indeed, Neurath, a founding figure of the Vienna Circle and editor-in-chief of *Unified Science*, believed that it was rational Protestantism that had reduced the power of priests and destroyed Christian theology (Neurath 1983).

More recently, the so-called "New Atheists," which includes biologist Richard Dawkins (2006), philosophers Daniel Dennett (2006) and Sam Harris (2004, 2006), and journalist and critic Christopher Hitchens (2007), have taken up the arguments of their positivist forebears. In particular, they exemplify the thought of British philosophers Bertrand Russell (1872–1970) and A. J. Ayer (1910–1989). Russell, for instance, for instance, argued that "between religion and science there has been a prolonged conflict, in which . . . science has invariably proved victorious."

He also once referred to religion as "a disease born of fear and a source of untold misery to the human race." Science, on the other hand, will help humanity get over this "craven fear." Russell believed that science will teach humanity to "no longer look around for imaginary supports, no longer to invent allies in the sky, but rather to look to our own efforts here to make this world a fit place to live in, instead of the sort of place that the churches in all these centuries have made it" (1957, 22, 24). Ayer, who provided the first English exposition of logical positivism in 1936, famously argued that "there is no opposition between the natural scientist and the theist who believes in a transcendent god," not because there is no inherent conflict, but rather because "religious utterances of the theist are not genuine propositions at all," and therefore "cannot stand in any logical relation to the propositions of science" (1952, 117). Religious propositions, in short, are meaningless. Not surprisingly, Ayer supported the secular humanist movements of his day, even becoming the first executive director of the British Humanist Association (Rogers 1999).

Other New Atheists, such as distinguished Harvard biologist E. O. Wilson (2004), Nobel Laureate Steven Weinberg (2007, 2015), late Cambridge theoretical physicist Stephen Hawking (2010), and Harvard cognitive psychologist Steven Pinker (2018), to name only a few, display in their various writings not only the view that science has usurped religion, but also exhibit an overtly optimistic and positivist view of human progress. Pinker, for example, has recently argued that "the findings of science imply that the belief systems of all the world's traditional religions . . . are factually mistaken," and that "the moral worldview of any scientifically literate person—one who is not blinkered by fundamentalism—requires a radical break from religious conceptions of meaning and value" (2018, 394).

Drawing from the positivists, the New Atheists argue that not only has modern science made belief in God irrational, but that such religious faith has always obstructed the progress of science. Interestingly, several critics have compared new atheism to Protestant fundamentalism (Fraser 2018). Indeed, Hitchens had once referred to himself as a "Protestant atheist" (Brown 2011). There is a great deal of truth in that description, which fits all the New Atheists. That the new atheism is the product of a post-Protestant intellectual environment associated with questions of evidence, proof, and rationality, there is no doubt. But critics of the new atheism seem to fundamentally misunderstand the kind of Protestantism that emphasized such criterion of belief. While Sarton, the logical positivists, and even the New Atheists may have, explicitly or implicitly, referred to the narratives of Draper, White, and other Protestant historiographers, their ultimate aim was radically different.

Conclusions

One consequence of mislocating the origins of the "conflict thesis" is that, despite the widening rejection of the conflict model for understanding science and religion relations, there still remains some dependence upon the very conflict meant to be undermined. That is, the "conflict thesis" has never been completely abandoned by historians of science—rather, it has merely been reconceptualized, redefined, or relocated to different areas. The irony here is that this revisionist work is remarkably similar to how Draper and White had conceived of the conflict themselves. Historians Frank M. Turner and James R. Moore, for instance, sought to eliminate the idea of "warfare" or "militant conflict" between science and Christianity by replacing it with a concept of a crisis of faith *within* religion, or what Moore called a "cognitive dissonance." Ironically, like Draper and White, Moore bewailed the "zealous defenders of biblical literalism" who indulged in "monkey business" in their "campaign against evolution in education." Moore thus sought to redefine Christian "orthodoxy" to the total exclusion of "Biblical fundamentalism" and "literalistic" hermeneutics, and essentially concluded that Christians needed to "come to terms with Darwinism." Indeed, Moore argued that if only Christianity could be "transformed" and "rightly viewed" there would be no conflict with science. Moore's "cognitive dissonance" theory is not so different from the concept of "conflict" or "warfare" Draper and White had envisioned (Moore 1979, 16, 68–76, 102–10, 346–51; Turner 1993, 171–200).

In more recent proposals for mapping out the historiographical way forward, conflict continues to occur at some level. In a *Festschrift* honoring the work of historian of science John Hedley Brooke, for instance (Dixon et al. 2010), Ronald Numbers identifies five "mid-scale patterns, whether epistemic or social, demographic or geographical, theological or scientific," where conflict remains. Geoffrey Cantor also highlights the tensions created within in the mind of an individual when confronting "engagements with science and religion." Like Draper and White, Cantor envisions conflict as the necessary catalyst for "change," for "helping sweep away a corrupt regime." As he puts it, "in the context of science and religion, conflict has been the engine of change, even perhaps of what we might call progress." While the most recent studies offer a more nuanced interpretation of the historically constructed boundaries or territories between "science and religion," they continue to perpetuate the false idea that Draper and White argued for a conflict between "religion and science" (Harrison 2015; Hardin et al. 2018). Thus, while historians have claimed that the "conflict thesis" is dead and buried, conflict remains, rising again in smaller scale struggles. None of these scholars have explored the potential of undermining the conflict thesis by showing that Draper and White did

not, in fact, adhere to it in its simplified form, the titles of their books notwithstanding. Rather, they tend to target a version that reflects more closely the work of Sarton and contemporary New Atheist views, and thus misunderstand the important changes that occurred in nineteenth-century religious thought.

While Draper and White have served revisionist historians well by offering a starting point to build more sophisticated historiographies, by reading their narratives as histories to debunk rather than primary sources reflecting the nineteenth-century views of science and religion modern historians of science have effectively created an interpretive *cul de sac*, often perfunctorily repeating the same accusations again and again. It is one of those curious ironies of history that the revisionist historiographers of science who have so successfully debunked many myths about science and religion are themselves partly responsible for constructing another myth about the alleged co-founders of the "conflict thesis."

Appendix

George Sarton wrote a number of letters to Andrew Dickson White. In the letter below (Division of Rare and Manuscript Collections at Cornell University, Ithaca, New York, reel 124), Sarton complains to White about his difficulty in finding a professorship in the history of science, and thus appeals to him for help in securing a position.

To the Honorable Andrew Dickson White
Mar 31, 1918
Ithaca, N.Y.

My Dear Dr. White,

I wish to heartily thank you for your kind note of January 16. If I did not thank you before it is not a lack of appreciation. Indeed this word of praise of yours is as precious to me as an honorary degree! I am now giving two courses at Harvard—one on the History of Physics and the other on "Science and civilization in the XVth & XVIth centuries," and for both courses I have been repeatedly obliged to refer to your admirable "Warfare between Science and Theology." This means that I remain closely in touch with you and that any encouragement from you can but be fully appreciated.

But I do not write this letter simply to thank you,—rather to appeal to you, being now—for no fault of mine, in the most critical position.

I was appointed "lecturer on the history and philosophy of science" at Harvard for two years. I have done well and worked considerably but war conditions make it impossible to reappoint me (This appointment was an artificial one anyhow—the necessary funds having been provided by a special subscription. I did not want such a subscription to be started again in these times). As all the Universities are now husbanding their resources to the limit, and as there is not a single university president having a genuine interest in the history of science, I have absolutely no chance of being reappointed anywhere.

Now you likely know my position: I have lost, at least temporarily, all my belongings through the German invasion of Belgium. When I came to this country in April 1915, I had—all counted—a hundred dollars. During the last two years, I have worked every day from 9 A.M. to 10 P.M., often on Sundays as well. I have not taken a real holiday since 1914. I have prepared and delivered more than 250 different lectures on all possible topics in my own field—from Babylonian to Henri Poincaré, and from the history of medicine to the history of calculus. I lectured at the Lowell Institute in Boston, and gave five long courses on the history of mathematics, physics, general science . . . in Harvard, Columbia, Illinois. (No wonder I could not publish much!)—Besides, my Harvard salary being only a nominal one, I lectured in about twenty other universities. You perhaps remember that I once lectured at Cornell University; I then had the honor and pleasure of being your guest.

I have tried to show that the history of science—i.e. the history of the real foundation of human progress—is not simply of immense interest in itself, but is even of greater importance in that it affords the best means of humanizing science and reconciling positive knowledge and idealism. I firmly believe that there is no other way to solve the great educational problem: "science vs. the humanities" than to introduce a little of the disinterested and historical spirit of the humanities into the scientific studies. Moreover, I have shown that to be Free, the history of civilization should be focused on the history of science. As a result of my work since 1911, I now am recognized leader and authority in the history of science not simply in America, but abroad.

Yet all this labor is in danger of being lost. I have been paid so little for all that I have done—that I now am just at the same point as I was when I landed here in 1915. As soon as my appointment in Harvard ceases I will have to chose between stopping my life's work or starving. Both alternatives are equally miserable.

My only hope is in the "Carnegie Institution," whose very purpose is to make disinterested studies possible. I have just written to Dr. [Robert] Woodward, explaining the whole case and asking him to intervene. The "Carnegie Institution" could help me either directly by paying me a salary for the work which I am doing or indirectly by giving a subsidy to a University to employ me.

I do not forget that this is war-time, but this war will not last forever,[1] and it would be a stupid waste—to now make me lose all the benefits of my propaganda and stops studies for which I have gathered more material than anybody close.

There are thousands of people in this country earning this living by studying and teaching general history, or the history of philosophy, in fact the history of everything except the history of science. Would it be an extravagance to give one man the possibility of earning his by such research work? There is not a single college that has not at least one professorship for the history of philosophy or the history of education . . . Is it believable that there is not in America a single chair devoted to the history of science? This in the XXth century?

I appeal to you as to one who did pioneer work in the same field long time ago. I think if you would have the kindness to write a word on my behalf to Dr. R. S. Woodward, or to Mr. Andrew Carnegie, or to both—it would do a great deal of good. No man can speak to them with more authority than

you, and in this case your recommendation would carry the more weight in that you would be speaking for a fellow-worker in your own line.

From all that I know of him, I am convinced that Mr. Carnegie himself would have been deeply interested in the history of science, and would have approved my way of understanding the history of civilization, if it had been possible to place the matter before him. He might even have been interested to the extent of endowing the "Institute for the History of Science and Civilization" which I planned and which was indorsed by the elite of the American philosophers, scientists and historians,—or at least of founding a chair devoted to these studies.

I beg to apologize, my dear Dr. White, for intruding upon you and interrupting the peace which you have so richly deserved, with the recital of my sad plight. I will only say for my defense that I would not have disturbed you if I had not been actually driven to it—this being almost my last step and last hope.

If I do not succeed now, I will simply have to give up these studies and to try to make a living for my wife and daughter by struggling in another field. This would mean an enormous waste of human energy, of course.

If you would help me by writing to Dr. Woodward and Mr. Carnegie in my behalf or in any other way, I would be grateful to you, and you would have rendered a new service to the history of science.

Believe me, my dear Dr. White,
Yours faithfully

George Sarton

Cambridge Mass., Easter Sunday 1918

P.S. Is it necessary to add, that if I had been given any opportunity of military service, I would have been only too glad to take it? I even tried to be employed by the U.S. government, being personally recommended by Mr. Woodrow Wilson.

1. The University of Berlin was founded in the year 1809—the year of Prussia's greatest misery—after the defeat of Wagram. Should we have less faith than the Germans?

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