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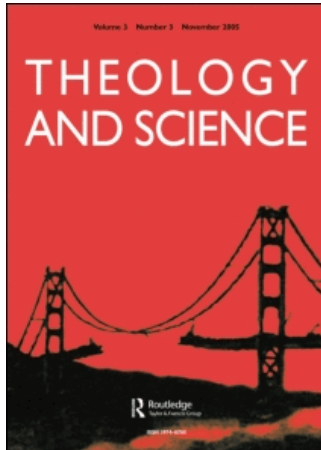
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# **Social and Ideological Roots of “Science and Religion”: A Social-Historical Exploration of a Recent Phenomenon**

**TAEDE A. SMEDES**

**Abstract** *Since the 1960s, there is a growing interest in interactions between religion and science. This article is an exploration of the roots of the contemporary field of “Science and Religion” (S&R), by investigating some social and historical connections between the emergence of S&R and modernizing trends in Western society. This article deals with three questions: (1) Is the emergence of the field of S&R the response to a conflict between religion and science? (2) Is S&R related to the process of modernization in Western society? (3) Whence the specific American interest in S&R?*

**Key words:** Baconian synthesis; Ian Barbour; Conflict; Differentiation; Independence; Modernization; Rationalization; Religion and science; Secularization; Trivialization

## **Introduction**

If one focuses solely on controversies surrounding creationism and Intelligent Design, one might overlook the fact that there are many serious-minded scholars who attempt to bring religion and science together again. The field of what is known today as ‘Science and religion’ (S&R) started out in its present form in the 1960s and today is booming business. New books on the subject appear on an almost daily basis, and the Templeton Foundation has become famous for its generous financial support of many S&R projects. However, where does this need to re-evaluate the relation between S&R come from? In this article, I explore some connections between the contemporary field of S&R and modernizing trends.

Basically, I deal with three questions: (1) Is the emergence of the field of S&R a response to a conflict between S&R? I argue that it is not. According to participants of the field, their concern is the separation of S&R. (2) Is S&R related to the process of modernization in Western society? I argue that it is, since the separation of S&R is the consequence of two trends: rationalization and differentiation. (3) Whence the particularly American interest in S&R? I argue that this interest stems from a particular reception of Enlightenment thought in early 19th century American culture.

Before proceeding, I must confess that I am neither a historian nor a sociologist, but trained in philosophy of religion and systematic theology. I participate actively in the field of S&R but as a European citizen, I am also often staggered by the way especially Americans deal with issues of S&R. Therefore, in this article, I have aimed at a reconstruction of a part of the history of the American approach in S&R, which should make the American way of dealing with S&R clearer. Moreover, often missing from books on the history of religion in the United States are the interaction between S&R, and 'Baconianism'—a term used by present-day historians to designate the close relationship between S&R in the United States between 1830–1860.<sup>1</sup> My hope is that future research in this area will yield more data about the dynamic relationship between S&R in an important period of American intellectual and social history that to many Europeans as well as to many Americans will explain why Americans today still grapple with the relationship between S&R.

### Is S&R the result of a conflict between S&R?

Sociologists and historians have often discussed the relation between religion, the natural sciences, and the rise of modernity in Western society in two contexts. First, they have argued that *religion has been an incentive for the development of modern science and modernity*. Max Weber, Robert Merton, Michael Foster, and Reijer Hooykaas all in their own ways have argued that early Protestantism extensively influenced the initial stage of the natural sciences and may even have been a crucial factor in its eventual success.<sup>2</sup> This may have been related to the idea that humans are allowed to investigate nature systematically because nature was "disenchanted" and "de-sacralized." Others, such as the Australian historian Peter Harrison, have pointed to the role of the Bible in conceptions of nature.<sup>3</sup> A second context is the *secularization thesis*: many sociologists have argued that the rise of modernity, and especially the success of the natural sciences, has led to a steady decline of religion in Western society. A crucial issue, and one that is still being debated, is whether this link between the success of science and the decline of religion in Western society is causal or whether the success of science was merely a factor in a process of secularization that was already taking place. It seems that most sociologists tend towards the latter view.

From a sociological perspective, then, the history of the relationship between S&R is one of deep irony of almost oedipal proportions: while religion was a factor in the success of science, according to the secularization thesis eventually science turned against religion, being responsible for the downfall of religion in Western society. Whether or not this historical development described by sociologist is accurate, it nevertheless is true that the relation between S&R often is described in terms of a kind of conflict. Science attempts to do away with religion or with any other superstitious activity, so the relationship between them must be tense. Therefore, the attempts to re-evaluate the relationship between S&R more constructively—a process which has been going on roughly since the 1960s<sup>4</sup>—is considered by many as having its starting point in this conflict-view. The conflict

between S&R is taken as an unwanted given, and so the contemporary S&R debate is considered to be a search for a solution that will settle the dispute.

The idea that S&R are in conflict still is popular and is shared by many people. The conflict view has become a cultural icon in Western culture and it is not difficult to identify some of its historical roots. Auguste Comte (1798–1857) argued in his *Discours sur l'esprit positif* from 1844 that in human history there is a spiritual evolution from the theological, through the metaphysical to the positive stage of the scientific worldview. Comte believed that in his days the scientific worldview had come to replace the other two. Comte's views were influential in Europe among Marxists and Freudians, and were revived by the logical positivists of the Vienna Circle. In Europe, logical positivism is still considered (though falsely, I believe) to be the expression of a stereotypical conflict-view. Comte's positivism was also influential in America,<sup>5</sup> though the conflict view in America primarily surfaced in debates about Darwinism, evolution and religious fundamentalism, notably creationism.

Thus the "warfare-metaphor" that was the focus of John William Draper's *History of the Conflict between Religion and Science* and of Andrew Dickson White's *A History of the Warfare of Science with Theology in Christendom* turned out to be, to paraphrase James Moore, a clever metaphor that dies hard.<sup>6</sup> Though these works, as Moore describes, were either personal reactions against specific developments in Catholic theology (Draper) or should be seen in the light of discussions surrounding the freedom of scientific inquiry (White), and thus were not at all intended to defend a general conflict between S&R, the rhetorical force of their titles and the reception of these books among a broad audience gave the idea that S&R were in conflict a life of its own. Thus, it is not surprising that many people still believe that S&R are entangled in a conflict, and that this conflict is a reason that some scholars working in S&R are aiming at reconciliation. Though at certain times and places one can acknowledge some truth in the conflict view, historians have argued that overall it is one-sided and simplifies the complexity of historical events, such as Galileo's trial or disputes about Darwinism.

I believe, however, that the idea that S&R arises from "conflict-avoidance" does not entirely express the views of the participants themselves. Indeed, my claim is that *it is not so much a conflict between S&R, but their independence or separation* that is the concern of these scholars to engage in dialogue. As a European example, take the classification of the field of S&R by the English biochemist and Anglican priest Arthur Peacocke in his "Introduction" to *The Sciences and Theology in the Twentieth Century*.<sup>7</sup> Peacocke identifies eight "possible loci of proposed interactions":<sup>8</sup>

- (1) Science and theology are concerned with two distinct realms.
- (2) Science and theology are interacting approaches to the same reality.
- (3) Science and theology are two distinct non-interacting approaches to the same reality.
- (4) Science and theology constitute two different language systems.
- (5) Science and theology are generated by quite different attitudes of their practitioners.

- (6) Science and theology are both subservient to their objects and can only be defined in relation to them.
- (7) Science and theology may be integrated.
- (8) Science generates a metaphysical framework in terms of which theology is formulated.

What is most striking about Peacocke's classification is that it does not contain a category of *conflict*. In his "Introduction," Peacocke nowhere mentions the notion that S&R could be in conflict. Peacocke's classification is not based on a dialectic between conflict and non-conflict views, but it seems to be based on a dialectic between the separation and non-separation of S&R. Peacocke mentions twice that under the influence of Barthian theology, S&R have slowly drifted apart.<sup>9</sup> It is also his observation (in 1981) that this separation seems to be losing ground and that there is a renewed interest in a dialogue between S&R. Peacocke's own position conforms to (2), and he had already argued in a book published two years before *The Sciences and Theology in the Twentieth Century* that a separation is unnecessary and that theology should relate itself to the sciences:

Any theological account of God's relation to the world is operating in an intellectual vacuum, not to say cultural ghetto, if it fails to relate its affirmations to the answers to these questions the natural sciences have been able to develop. It is true that theology, the intellectual ordering of the religious experience, is concerned with wider and deeper questions of overall intelligibility and personal and social meaning than the natural sciences as such. But *these* fundamental questions, with the daunting implications of their possible answers, cannot be asked at all without directing them to the world as we best know and understand it, that is, through the sciences.<sup>10</sup>

In later works, Peacocke adamantly argues that theology has the potential and even the intellectual and cultural duty to start anew an interaction with the sciences to overcome the isolationist tendencies inherent in Barthian and Wittgensteinian approaches to religion. His own writings are explorations into the nature of such an interaction and the ramifications for theology.

The view that S&R is not triggered by a conflict view is confirmed by an American example. The American physicist and theologian Ian Barbour is most famous for his fourfold classification of possible relations between S&R in terms of conflict, independence, dialogue, and integration. However in his early work, especially *Issues in S&R* from 1966, Barbour merely distinguishes between a *contrast* between S&R (which he would later call "independence"), *parallels* of S&R (which in later works become arguments for a "dialogue" between S&R), and *derivations* of religion from science (the later "integration" position).<sup>11</sup> Like Peacocke, Barbour initially does not distinguish a conflict position, but starts from a situation in which S&R are independent and autonomous.<sup>12</sup> However, unlike Peacocke, Barbour appreciates this contrast view, since "such a separation of S&R as *complementary languages* is indeed a valid starting point or 'first approximation' for representing the relations between them."<sup>13</sup> He argues that such a separation will avoid mistakes made in the past, honor the distinctive character of the

different disciplines, and reflect the humility of many scientists and theologians towards all-inclusive truth-claims. Nevertheless, a conceptual separation of disciplines is merely a starting point, for Barbour discerns "significant possibilities for dialogue."<sup>14</sup> First, there are methodological parallels between S&R. Secondly, "it will be urged that we must seek *an integrated worldview*. 'Complementary perspectives' are, after all, perspectives on a single world."<sup>15</sup> Third, there is an opportunity for developing a 'theology of nature.'<sup>16</sup> Finally, the new view of nature compels us "to reexamine our ideas of God's relation to the world."<sup>17</sup>

Barbour thus also starts from a discernment of a separation between S&R, parallel to Peacocke. Both Barbour (in 1966) and Peacocke (in 1981) argue that this separation can be overcome by a dialogue. In his Gifford Lectures, published in 1990 as *Religion in an Age of Science*,<sup>18</sup> Barbour does identify the possibility of a conflict between S&R and argues that scientific materialism (either in its epistemological or metaphysical form) and biblical literalism (especially in the form of scientific creationism) are two major examples of a conflict view. This change of perspective raises the question whether between 1966 and 1990 there has been a change of climate. The separation and isolation of S&R that Barbour notes in 1966 and that Peacocke in 1981 still considers a persistent (though waning) position, at the end of the 1980s and the beginning of the 1990s are replaced by the idea that there apparently is a conflict.

Therefore, in the case of Peacocke and Barbour, one must conclude that there are no indications that their drive to bring S&R together is derived from a drive towards conflict resolution. Instead, they opt for interaction due to the recognition that S&R are separated, which could lead to a cultural isolation of theology. Others working in the field of S&R argue in a similar vein, often blaming Barth's theology to be an important theological source of separation. Thus the philosopher of religion Nancey Murphy writes,

...the two predominant views in the modern period on the relation between theology and science (the two-worlds view and the conflict model) have each in its own way served to insulate theology from science—the very part of the web [of beliefs that constitutes the Western worldview] that, as a whole, is least likely to be called into question. The apologetic task for the present is to attempt to repair the damage done by these two misguided views of the relation. This means rebuilding logical connections between Christianity and science in order to show that Christianity is not merely an optional addition to Western thought.<sup>19</sup>

More examples can easily be given, not only by American scholars. Ian Barbour takes Barth's "neo-orthodox" theology as an example of the "contrast view" locating a discontinuity and dissimilarity between the contents and methodology of theology and those of science.<sup>20</sup> Arthur Peacocke explicitly ascribes the situation of "drifting apart" of S&R to the influence of Barthian theology.<sup>21</sup> Harold Nebelsick, though he expresses sympathy for Barth's theology, nevertheless argues that Barth "appears to place theology . . . in our day in the kind of insulated solitude where it has never been and by the nature of both its finitude and cultural integration can never be."<sup>22</sup> Hans Schwarz argues that in Barth's theology, "the doctrine of creation lost its anchorage in the world, a world which is largely

shaped by applied science (i.e. by technology). This led to a standstill in the dialogue, and in a society shaped by the natural sciences, theology was increasingly considered to be on the fringe.<sup>23</sup> Wentzel van Huyssteen argues that the “nonfoundationalist” or “fideist” tendency to see the rationality of religion as radically different from scientific rationality is “a protective strategy required as a first epistemic move for any irrational retreat to commitment.”<sup>24</sup> Van Huyssteen argues that adopting an independence perspective implies that “all hope of finding a cross-disciplinary location for theological reflection as a plausible reasoning strategy is lost forever.”<sup>25</sup> Recently, Mikael Stenmark in his book *How To Relate S&R* explicitly rejects the independence position, since “everything we can learn in one area of life from another area that can improve our cognitive performance ought to be taken in to consideration by rational people.”<sup>26</sup>

I conclude that it is the independence of S&R that is the *Anliegen* of these scholars to enter a dialogue between S&R. These scholars not only argue that the contemporary situation is one in which S&R are separated, but moreover, that this separation is to some extent the fault of (Barthian) theology.<sup>27</sup> In the eyes of these scholars, it is theology itself that has allowed the gap between S&R to grow wider, thus increasingly isolating itself from the broader social and intellectual climate of which it could have been and ultimately should be a part. However, can we locate the roots of this separation between S&R? In addition, how is this separation related to the notion of modernity?

### **S&R as a reaction to trends in modernization?**

I want to argue in what follows that the growing field of S&R can be seen as a reaction against the processes of fragmentation and differentiation that are inherent to the modernization process in Western society. From the above-mentioned reactions to the idea that S&R are independent can be inferred that *there is the fear that religion could become socially isolated and trivialized*. If religion wants to keep playing a role in public debates, the “apologetic task” of theology (to use Murphy’s phrase) is to engage in a dialogue with science. Hence, van Huyssteen’s arguments against immunizing strategies that would lead theology back to socio-cultural isolation. Hence, Schwarz’s lament that the breakdown of a dialogue between S&R has pushed religion towards the edge of society.

Religion still is a major element in American society, so much so, that some sociologists have claimed, “in the debate over secularization, the United States represents an important exception to the view that religion is declining in Western societies.”<sup>28</sup> However, according to the historian, George Marsden, in his controversial book on the relation between religion and the academy, not the decline of religion but its *trivialization* is the real issue in the US, especially in academic circles:

While it is recognized as a legitimate extra-curricular activity, so far as the academic dimensions of a university are concerned, it is expected to have no more importance

than would membership in a bridge club. Bridge players are not discriminated against in the university; it's just that their pastime is irrelevant to academic life.<sup>29</sup>

As Marsden argues, trivialization arises because in schools and universities it is being taught

... that religion is really a private affair and that when it comes to the important things of life, such as understanding the world, our culture, other cultures, how you should make a living—matters that have to do with 'the real world'—one should make no reference to beliefs that in other contexts are said to be ultimate.<sup>30</sup>

Marsden's point is that, though religion revolves around (to use Tillich's phrase) human's "ultimate concern," the privatization of religion, which is a phenomenon described by sociologists to belong to the modernization process, has relegated this ultimate concern to certain times and places that have minimal connections to the public sphere.

Such an analysis not only applies to the US, but could also apply to the Dutch situation or perhaps to the European situation in general. It is a result of a process sociologists have often called *secularization*, though the term is quite hard to define. The Dutch sociologist of religion Gerard Dekker has argued that secularization in Western societies can be characterized by at least three features:<sup>31</sup>

1. Secularization entails a diminishing of the religiosity of people. Religious actions and beliefs become less important in people's lives.
2. Secularization entails that the reach of religion is limited. This means that more and more sectors and aspects of life and society become independent from religion, and that religion is relegated to one's personal beliefs.
3. Secularization entails that religion adapts itself to developments in society. This may result in a more this-worldly attitude and a more secular consciousness.

Secularization thus entails that the position of religion in society changes dramatically and forces religion to re-orient itself. Religion may still revolve around one's "ultimate concern," but it is no longer able to provide an all-encompassing framework for society, as it supposedly did in pre-modern times.

Sociologists and historians often describe secularization as the change in the social-cultural position of religion, as being a specific aspect of the modernization process in Western society. This process is rooted in the Reformation and the ensuing religious wars that ruptured in Europe during the 17th century, especially the Thirty Years' War of 1618–1648.<sup>32</sup> Religion was a central element in this war. Though it was a European conflict, much of the war took place on German territory and left deep scars in the consciousness of the people. The war ruptured societal structures, and in 1648 people saw themselves confronted with the task of building a new society on new foundations: a *Neubegründung* of the civic and civil



order, of justice, morality and ultimately of religion. However, this *Neubegründung* should be based on humanity's common nature and should have universal validity. Enlightenment philosophers, such as Descartes, undertook this search for a *Neubegründung* and believed to have found it in natural scientific method and procedure. Descartes was so impressed by the apparent certainty of the axiomatic-deductive method of mathematics that he became convinced such a method to be paradigmatic for the methodological search for universal truths on which society should be built. Descartes saw himself an inhabitant of the new *Cosmopolis*.<sup>33</sup>

The post-war situation was not one of hostility towards religion. In the German and British Enlightenment, religion still was considered a valuable element of society, though the religious wars led people to acknowledge that no single confession was able to establish its universal validity. The wars ended in compromises between different parties with different beliefs. This social-cultural situation slowly transformed into the situation that characterizes Western society today, but with major impact on the position of religion in that society.<sup>34</sup> First, government and justice were detached from religion and became connected to what was believed to be universally valid for human beings. Second, religious matters were considered to be restricted to individuals' personal beliefs, so that religion was now considered a matter of private concern. Theologically, attention was directed more to practical matters and ethical consequences of religious beliefs and was focused less on the content of religious dogmas. Finally, different sectors of society became independent and autonomous—such as state, economical, and scientific sectors. This meant an uncoupling of these sectors from theology as the integrating center and the emergence of a more secularized consciousness.

This meant that a process of *differentiation* was initiated. As sociologist Steve Bruce explains, "Modernization entails structural and functional differentiation, by which I mean the fragmentation of social life as specialized roles and institutions are created to handle specific features or functions previously embodied in or carried out by one role or institution."<sup>35</sup> During early modernization, many social functions previously belonging to the Christian Church became secularized and autonomous. Moreover, Bruce continues, "as the functions of society become increasingly differentiated, so the people also become divided and separated from each other—that is, structural differentiation was accompanied by social differentiation."<sup>36</sup> Consequently, "With the proliferation of new social roles and increasing social mobility, traditional integrated organic or communal conceptions of the moral and supernatural order began to fragment."<sup>37</sup> In other words, with modernization society becomes a fragmented whole, not only structurally and functionally, but also morally and spiritually.

This differentiation of society went hand in hand with *rationalization*, i.e. a way of thinking about the world that was very much influenced by the emerging natural sciences. Steve Bruce has argued (following Weber and Merton) that the Reformation may have been a stimulus to an initial rationalization process in Western society.<sup>38</sup> However, the success of science and technology also added to

the erosion of the plausibility structure of religion. As Bruce rightly argues, religion did not lose much of its plausibility because of a direct clash of ideas between S&R, but it was

... the more subtle impact of naturalistic ways of thinking about the world. Science and technology have not made us atheists. Rather, the fundamental assumptions underlying them which we can summarily describe as 'rationality'... make it unlikely that we will often entertain the notion of the divine.<sup>39</sup>

The point is not that S&R are in direct conflict, but that the underlying naturalistic conception of the world competes with a religious conception. With modernization, Western society took a large step to distance itself from a situation in which the existence of God was no longer a matter of fact but of personal belief.

This, in very broad strokes, is what sociologists and historians argue is the beginning of the modernization of Western society. Modern Western society evolved into a situation of differentiation and perhaps even fragmentation. S&R may have started out together, but have drifted apart to become independent and even autonomous sectors of society. The rationalization process also slowly moved religion out of the public sphere and, ultimately, to the fringes of society itself, with the ultimate possibility that religion becomes trivial. *Such is the contemporary situation that faces scholars working in the field of S&R.*

Of course, this situation is recognizable in many parts of Western society. Moreover, if S&R is indeed a reaction against the modernizing and secularizing tendencies of differentiation and rationalization, would one not expect the field of S&R to be broader than merely the English-speaking world? Indeed, in countries such as Germany and the Netherlands, attempts are being made to renew reflections on the interaction of S&R. However, in those countries ethical issues connected to the practical application of science still gain more interest than questions concerning the contents of scientific theories and their ramifications (if any) for religious belief. Also in the Netherlands and Germany, theologians seem wary of natural theology and other attempts to link scientific theories to realist interpretations of theological doctrines. Apparently, among Dutch and German theologians, the separation between S&R is not so much an issue as it is for many American scholars. This is unlike the American situation, in which this separation *is* an issue. This already implies that the field of S&R in the US has some specific characteristics. Furthermore, the field of S&R is especially prominent in English-speaking parts of the world, especially the US. Whence, then, this particularly American interest in S&R?

### **The historical roots of S&R in America: the Baconian synthesis**

I already argued that I believe that the particular American interest in S&R has little to do with the conflict-view. The controversy over, for instance, creationism or Intelligent Design, as well as the conflict view in general, are merely symptoms of a much deeper problem that emerges if one takes into account

the reception of Enlightenment ideas in the US, especially with regard to the relation between S&R.<sup>40</sup>

The reception of Enlightenment ideas among scholars in America was affected by at least two developments. First, as Henry May writes, the bloodshed of the French Revolution shocked many Americans, as they now saw what devastating effects Enlightenment ideas could have.<sup>41</sup> In a sense, the American attitude of the European Enlightenment ideas became more cautious because of their potentially destabilizing effects on society. Second, Mark Noll writes that the American Revolution and the struggle for independence from England (1775–1783) had the effect that it “cast into doubt all forms of traditional authority inherited from Europe, including the authority of historic churches and ecclesiastical traditions.”<sup>42</sup> This meant that since traditions were now looked upon with suspicion, American theologians largely had to find their own ways of doing theology.

George Marsden writes that in the 18th century, “Americans perceived no conflict between scientific or rational ‘Enlightenment’ ways of looking at things and their Christian heritage . . . Christian and scientific Enlightenment beliefs were almost always seen not as contradictory but as complementary.”<sup>43</sup> This remained the case until at least the second half of the 19th century. One of the factors that made possible a hospitable climate for the interaction of S&R was the American reception of the philosophy of the Scottish “common sense” realism of Thomas Reid, Francis Hutcheson, and Dugald Stewart. Among Protestant theologians, common sense realism inspired a particular view of Scripture, but in the beginning of the 19th century, it also gave rise to a particular view of science, which historians nowadays call *Baconian science*.<sup>44</sup> According to Mark Noll, the philosophy of the Scottish Common Sense realists “provided American thinkers with apparently secure intellectual foundations for reconstructing theology and the churches without the need to rely on tradition.”<sup>45</sup>

Thomas Reid (1710–1796) was fascinated, though unsatisfied by Descartes’ and Locke’s ideas about the mind-body problem and the source of human knowledge.<sup>46</sup> He acknowledged Hume’s criticisms, but also rejected Hume’s radical skepticism. According to Bozeman,

In Reid’s system, taken over by Stewart and by innumerable Americans, perception was construed as a dynamic activity in which sense seized immediately on the thing and established continuous contact between mind and nature. What is actually perceived, that is, is no longer an idea of a thing [as Locke believed] but the real empirical lineaments of the thing itself.<sup>47</sup>

The experience of external objects during perception was “inevitably accompanied by an intuitive belief or ‘judgment’ as to the objective existence both of that object and of its field of causal relationships.”<sup>48</sup> Reid believed that such a view would restore the unity of sense and intellect in the spirit, and so could fulfill the “Great Instauration” of empirical science that Francis Bacon had called for, but that had suffered enormous blows due to the philosophical skepticism of the 16th century.<sup>49</sup>

Many American intellectuals from about 1800 took up Reid’s ideas to synthesize S&R into a Baconian ideal of science, which blossomed between approximately

1830 and 1860.<sup>50</sup> Baconianism saw induction as its primary goal: the accumulation of facts by observation, and the abstinence of any speculation about anything unobservable. It was believed that after accumulating facts, scientists could compare and classify them into schemes that eventually would reveal an underlying order and system of laws.

Theologians who adopted this Baconian ideal, were convinced (to quote the words of the Georgia theologian J. S. Lamar from 1860) that "the whole Bible is founded upon facts."<sup>51</sup> Theologians could study Scripture using the inductive method, generating facts as certain as those resulting from scientific experimentation and observation. Baconian theologians took the ancient idea of the "two books" quite seriously: both nature and Scripture, when interpreted correctly, were the source of indubitable knowledge. Alternatively, as Eva Marie Garrouette writes, "These thinkers argued straightforwardly that nature constituted one set of facts and that the biblical scriptures constituted another, and that scientists and theologians could apply the very same scientific method to the study of both."<sup>52</sup> In the words of the Princeton systematic theologian Charles Hodge (1797–1878), "The Bible is to the theologian what nature is to the man of science. It is a storehouse of facts; and his method of ascertaining what the Bible teaches, is the same as that which the natural philosopher adopts to ascertain what nature teaches."<sup>53</sup> However, while scientists revealed natural facts, theology yielded facts of God's revelation, but "the two kinds of facts—natural and revealed—were complementary and absolutely noncontradictory."<sup>54</sup> Science was of help in purifying religion and dispelling myths and speculation; religion helped scientists in deciphering the facts of nature in accordance with Biblical revelation.

Yet, although science itself was seen as having an intensely religious character, and though S&R were considered to be on equal footing, the relation between S&R was not entirely symmetrical. According to Garrouette, who studied the language used by different parties during the Baconian era,<sup>55</sup> the dominance of Baconianism "carried important social consequences for different speakers. In particular, it set up an expectation that science should pass certain religious tests—that it should be held responsible for spiritual faithfulness."<sup>56</sup> To put it bluntly: science was the handmaiden for theology and "good scientists had to be good Christians."<sup>57</sup> On the one hand, which facts of nature scientists were allowed to conduct and which conclusions they arrived at, was kept in check by theology. On the other hand, Christian theology was presented as a royal example of inductive philosophy.<sup>58</sup> The result was that "for clergymen, theologians, and others without particular training in scientific research, this [Baconian] philosophy opened up broad vistas of authoritative speech, offering them the occasion to comment extensively on scientific issues."<sup>59</sup> Theologians found themselves able to challenge scientific claims by claiming the theories to be spiritually deficient or merely "speculative."

According to Bovenkamp, during the 1850s, natural theology became more responsive to science, even to the extent that "natural theology in America began to look . . . more like the works of the scientists themselves."<sup>60</sup> S&R thus converged to an encompassing framework. However, after the 1850s the decline set in due to theological, philosophical, and social factors. When Darwin's *On the Origin of*

*Species* was published in 1859, the theological atmosphere changed as liberal churches gradually lost interest in natural theology. Moreover, natural theology and common sense realism was severely challenged by the philosophy of Immanuel Kant, which had become increasingly influential in America during the 1830s and 1840s, but became prominent in American philosophy from the 1850s onwards.<sup>61</sup> Another social factor in the decline of Baconianism was, according to historian Mark Noll, that the Civil War of 1860–1865 had a strong religious character, which affected especially Protestantist spirituality.<sup>62</sup>

Between 1870 and 1890, the already weakened Baconian synthesis of S&R was confronted by anti-religious scientific thinkers who had taken up Comte's positivism.<sup>63</sup> Some scientists even claimed, "that science had advanced so far as to be capable itself of fulfilling the vestiges of spiritual functions that remained after religion's demolition."<sup>64</sup> The heavy resistance against the Baconianist synthesis can partly be explained as the result of the professionalization of the natural sciences. Scientists wanted to make clear that *they* were the authorities with regard to scientific claims and explanations of natural phenomena. They contested the factual nature of the Bible by attacking the literalist interpretation that was inspired by common sense realism.<sup>65</sup> Moreover, they contested the theological use of common sense realism by pointing out the influence of subjectivity both in writing and in reading the biblical texts, in effect pointing the way to hermeneutical issues in biblical interpretation.<sup>66</sup>

The attack on Baconianism was an emancipation and a liberation of scientists from the shackles of dogmatic theology. It is in this context that one should also consider Draper's and White's books about the "conflict" between S&R. Neither Draper nor White were hostile to religion nor where their works intended to attack Christianity in general, but they attempted to break the restraints of certain types of theology on the freedom of scientific inquiry.<sup>67</sup>

### The breakdown of Baconianism and the separation of S&R

The downfall of Baconianism and the attacks on theology's control of scientific inquiry had strenuous consequences for some aspects of American society:

The new learning ... disrupted the settled relationship between Protestantism and the nation's intellectual life. It began the process that eventually ended Protestant control of higher education. It opened the door to secular interpretations of life. It opened up a possibility that had barely existed in America before the last third of the [19th] century: the willingness of some intellectuals to publicly question the existence of God.<sup>68</sup>

Another factor that increased the stress on theologians was the increasing influence of European scholarship, especially of German biblical criticism. While some used Darwinism to attack biblical literalism, biblical criticism from the European continent "seemed to undermine the confidence most American Protestants had placed in the truthfulness of the Bible."<sup>69</sup> For many, this new biblical criticism led to unrelenting relativism. While Scripture traditionally had

been considered to be God's inerrant revelation, an unquestionable authority that was both the source and culmination point of scientific inquiry, the Bible suddenly was reduced to a mere human document that needed advanced scholarship to decipher it.

In other words, in just a few years time theology in America was thrown into a heavy crisis with both internal (biblical criticism) and external (Positivist criticism) aspects. In addition, because theology had always been taken for granted in the Christian context of American society, theologians were incapable of responding timely and adequately to these mounting tensions. Yet again, these tensions did not lead a conflict between S&R. Instead, as Garrouette argues, positivist scientists argued for a *separation* of S&R:

In and through all of their arguments, the anti-religious activists explicitly called for the entire separation of the domains of 'religion' and 'science.' Against all of the anxious Baconian 'reconciliations' of these spheres of inquiry, positivists simply asserted that the two *could not* contradict. This was not because, as for earlier thinkers, S&R composed a single, self-consistent whole, but because they were completely disjunct; they simply had nothing to say to each other.<sup>70</sup>

According to Garrouette, these positivist scientists were quite successful in arguing that theologians and other religious speakers "should not concern themselves with facts because they did not have access to them,"<sup>71</sup> even to the extent that

In subsequent decades, their accomplishment in science reverberated through most other institutional fields in American society. It provided a model of allegedly objective and universal scientific knowledge, in which religion was irrelevant at best. The model served as a key authority in the secularization of American public life more broadly.<sup>72</sup>

This observation is confirmed by Jon Roberts, who in his work on the reception of Darwinism among Protestants concludes that around 1900 most American scientists "did not militantly deny the validity of the theistic approach to nature; they simply disregarded that approach."<sup>73</sup> Moreover, as Roberts argues, many liberal theologians came under the influence of the German theologian Albrecht Ritschl, and focused their theology more on the role of Christianity as a source of human values. For those theologians "the relationship between science and theology ceased to be a major source of interest."<sup>74</sup> Those who remained interested often were biblical literalists, many of whom in later years were drawn to religious fundamentalism and the acceptance of creationist ideas.

## Conclusions

One can thus conclude that the emergence of the present-day field of S&R is a response to modernization processes in Western society, in particular to

differentiation and rationalization. It has also become clear that modernization in America has had a dynamic of its own: differentiation and rationalization became mixed with the typically American phenomenon of a Baconian synthesis between S&R especially from 1830 to about 1860. During that period, Protestant theology and science together ruled the intellectual forum. From the 1870s onwards, the relation between the two becomes uneasy, as scientists feel themselves bound to theological ideas and try to break free from, often by using rhetorical force (the birth of the "warfare" metaphor).

From the 1890s until at least the 1960s, the Baconianist synthesis was buried when scientists argued for a full-scale separation of S&R, while slowly pushing religion out of the intellectual and academic forum by disregarding it. Religion was no longer considered an intellectual sparring partner. This separation of S&R also had socio-cultural repercussions: religion slowly seemed to become irrelevant and trivial, as Marsden and others have argued. When in the 1960s positivism waned under the influence of the new philosophies of science of Popper and Kuhn, scholars who took an active interest in evaluating the relationship between S&R, saw themselves confronted with a cultural rift between S&R. Theology was largely ignored and considered to be intellectually uninteresting, while some theologians created a direct conflict between science and Scriptural "data." As we have seen, this cultural rift was and it still is seen as unproductive and unsatisfactory especially by many American scholars working in the field of S&R. These scholars argue for at least a new dialogue between S&R and hope for a new integration.

## Acknowledgements

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## Endnotes

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  - 4 See J. Gilbert, *Redeeming Culture: American Religion in an Age of Science* (Chicago: University of Chicago, 1997), who describes the changes in the relation between religion and science between the end of WWII and the early 1960s, which "marked a high point in the prestige of science considered as a social model and a delivery system of social betterment" (5).
  - 5 See C. D. Cashdollar, *The Transformation of Theology, 1830–1890: Positivism and Protestant Thought in Britain and America* (Princeton, N.J.: Princeton University Press, 1989).
  - 6 J. W. Draper, *History of the Conflict between Religion and Science* (London: Henry S. King, 1875); A. D. White, *A History of the Warfare of Science with Theology in Christendom* (New York: D. Appleton & Company, 1896); J. R. Moore, *The Post-Darwinian Controversies: A Study of the Protestant Struggle to Come to Terms with Darwin in Great Britain and America 1870–1900* (Cambridge: Cambridge University Press, 1979), 19.
  - 7 A. R. Peacocke, "Introduction," in *The Sciences and Theology in the Twentieth Century*, ed. A. R. Peacocke (Stocksfield: Oriol, 1981), ix–xviii.
  - 8 *Ibid.*, xiii–xv.
  - 9 *Ibid.*, xi and xii.
  - 10 A. R. Peacocke, *Creation and the World of Science: The Bampton Lectures, 1978* (Oxford: Clarendon, 1979), 47. Italics in original.
  - 11 Ian G. Barbour, *Issues in Science and Religion* (Englewood Cliffs, N.J.: Prentice-Hall 1966).
  - 12 *Ibid.*, 3.
  - 13 *Ibid.* Italics in original.
  - 14 *Ibid.*
  - 15 *Ibid.* Italics in original.
  - 16 Barbour describes a "theology of nature" as "an attempt to view the natural order in the framework of theological ideas derived primarily from the interpretation of historical revelation and religious experience" (*Ibid.*, 5). Compare his later description of "theology of nature" as the view that "starts from a religious tradition based on religious experience and historical revelation. But it holds that some traditional doctrines need to be reformulated in the light of current science" (Ian G. Barbour, *Religion and Science: Historical and Contemporary Issues* (New York: HarperCollins, 1997), 100).
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- 23 H. Schwarz, *Creation* (Grand Rapids, Mich.: Eerdmans, 2002), 143.
- 24 J. W. Van Huyssteen, *The Shaping of Rationality: Toward Interdisciplinarity in Theology and Science* (Grand Rapids, Mich.: Eerdmans, 1999), 80.
- 25 *Ibid.*, 76.
- 26 M. Stenmark, *How to Relate Science and Religion: A Multidimensional Model* (Grand Rapids, Mich.: Eerdmans, 2004), 59 and 81.
- 27 Although Barthian theology is most often accused of being responsible for the separation between science and theology, one could also point to existentialist theology, inspired by Kierkegaard, Heidegger, and Bultmann.
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- 29 G. M. Marsden, *The Outrageous Idea of Christian Scholarship* (New York & Oxford: Oxford University Press, 1997), 20.
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- 36 *Ibid.*, 9.
- 37 *Ibid.*
- 38 S. Bruce, *Religion in the Modern World: From Cathedrals to Cults* (Oxford & New York: Oxford University Press, 1996), 19–24.
- 39 *Ibid.*, 51.
- 40 Good works on the Enlightenment in the US are H. F. May, *The Enlightenment in America* (Oxford: Oxford University Press, 1976) who distinguishes between several 'Enlightenments'; E. Cassara, *The Enlightenment in America* (Lanham, Mass.: University Press of America, 1988); H. S. Commager, *The Empire of Reason: How Europe Imagined and America Realized the Enlightenment* (London: Weidenfeld & Nicolson, 1978).
- 41 May, *The Enlightenment in America*, 105 ff.
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- 43 G. M. Marsden, *Religion and American Culture*, 2nd ed. (Belmont, Calif.: Wadsworth/Thomson Learning, 2001), 43.
- 44 Cf. E. M. Garrouette, "The Positivist Attack on Baconian Science and Religious Knowledge in the 1870s," in *The Secular Revolution: Power, Interests, and Conflict in the Secularization of American Public Life*, ed. C. Smith (Berkeley, Calif.: University of California Press, 2003); Bozeman, *Protestants in an Age of Science*; Bovenkamp, *Science and Religion in America*.
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- 47 Bozeman, *Protestants in an Age of Science*, 10.

- 48 Ibid.
- 49 Ibid., 12.
- 50 Ibid., 21–30, about the consolidation of realism and Baconianism among American intellectuals.
- 51 Quoted in *ibid.*, 144.
- 52 Garrouette, "The Positivist Attack," 199.
- 53 C. Hodge, *Systematic Theology*, 3 vols. (New York: Charles Scribner's Sons, 1872), I:10; cf. also Bozeman, *Protestants in an Age of Science*, 108ff.
- 54 Garrouette, "The Positivist Attack," 199.
- 55 E. M. Garrouette, *Language and Cultural Authority: Nineteenth-Century Science and the Colonization of Religious Discourse*, (Princeton University: Ph.D. diss. Department of Sociology, 1993).
- 56 Garrouette, "The Positivist Attack," 199.
- 57 Ibid.
- 58 Bozeman, *Protestants in an Age of Science*, 156.
- 59 Ibid., 199.
- 60 Bovenkamp, *Science and Religion in America*, 44.
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- 64 Garrouette, "The Positivist Attack," 203.
- 65 Ibid., 203–206.
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- 67 For more details, see Moore, *The Post-Darwinian Controversies*, 19–49.
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## Biographical Notes

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