

## Does Science Undermine Faith?

Neven Sesardic

At one hour scientists, at another they are Christians... and holding thus the two ends of the chain, they are careless of the intermediate connection.

William James

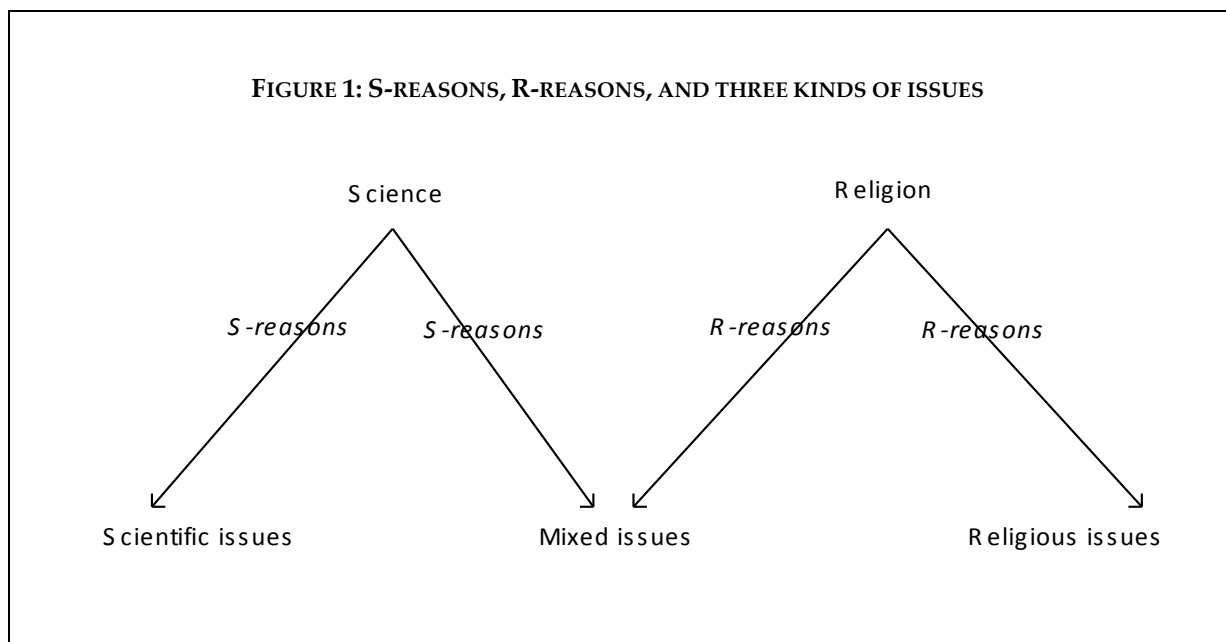
### 1. THREE KINDS OF ISSUES

I take it as relatively non-controversial that there are both purely scientific issues and purely religious issues. For instance, surely no religion would want to decide about the truth-value of propositions like "The melting point of ethyl alcohol is 78 degrees Centigrade." Again, no science is interested in ruling on propositions like "God's nature springs from the Holy Trinity." But there are also notorious examples of "mixed" issues over which religion and science clashed in the past: the existence of antipodes, the age of the earth, the heliocentric system, the theory of evolution, etc.

If we call all considerations that happen to influence people in forming their beliefs *cognitive* reasons, we can say that a conflict often arose between two fundamentally different types of cognitive reasons. The use of *scientific* cognitive reasons (S-reasons) is governed by an expectation that observation has a crucial role in resolving the epistemic conflict between the rival hypotheses. (Needless to say, this observational route to truth will, as a rule, be much more complex than the picture suggested by a simplistic verificationism or falsificationism.) On the other hand, *religious* reasons (R-reasons) typically rely on things like revelation, authority of sacred writings, infallibility of church leaders or on the personal experience of God's commanding presence. Admittedly, this way of describing the difference

between S-reasons and R-reasons is not too precise and articulate, but it is impossible to go into a more detailed discussion of that distinction here. Fortunately, this may not be a problem, because for the purposes of my argument it is entirely sufficient if you just concede (as I hope you will) that scientific and religious cognitive reasons are essentially different, in whatever way that difference be eventually explained.

The relation between S-reasons and R-reasons is shown in the following picture:



Obviously, what makes a conflict between science and religion possible are the “mixed issues.”

**2. THE CURSE OF PARTICULARITY**

Historically, religious doctrines contained as their essential and integral part certain beliefs that could be empirically tested. After some of these religiously inspired empirical “hypotheses” had been overthrown by the advancement of science the original meaning of the sacred doctrine was usually reinterpreted; it was consequently suggested that the earlier (now universally abandoned) belief was previously adopted only because God’s true message had been misunderstood. This is a standard hermeneutical procedure whereby faith is

consolidated when facing the threat of empirical “disconfirmation.” But one thing is worth stressing here: when the initial content of a given religious doctrine is thus finally revised (usually after many futile attempts to resist the emerging scientific consensus going clearly against it), this is actually quite compatible with the empirically compromised and ultimately discarded belief having antecedently enjoyed the status of an absolutely sacrosanct truth (“an article of faith”). For instance, it is all too easy for us today to say that, yes, of course, Christianity is reconcilable with the heliocentric cosmology. But in the 17th century the faith was for many such a syncretic mixture of astronomic and purely religious ideas that the new theories about the motion of celestial bodies were sincerely and with horror perceived as utmost blasphemy.

A good illustration is the following statement of the Jesuit Melchior Inchofer from 1631: “The opinion of the earth’s motion is of all heresies the most abominable, the most pernicious, the most scandalous; the immovability of the earth is thrice sacred; argument against the immortality of the soul, the existence of God, and the incarnation, should be tolerated sooner than an argument to prove that the earth moves.” Note that this was not an opinion of an anonymous fanatic or isolated extremist. On the contrary, Inchofer’s view about the issue must have been close to the official standpoint of the Catholic Church at the time, for he was one of the three persons asked by the Inquisition to investigate the case of Galileo’s alleged heresy, and he was also consultant to the Inquisition during the trial of 1633.

The extent to which the geocentric perspective has occasionally penetrated the very roots of Christianity is also reflected in Bellarmine’s letter to Paolo Antonio Foscarini in which the Cardinal offered his comments on the latter’s manuscript of a Copernican treatise:

As you know, the Council of Trent forbids the interpretation of Scripture that would go against the common opinion of the Holy Fathers. If you read not only the Fathers but also the modern commentators of Genesis, Psalms, Ecclesiastes and Joshua, you will see that they all

agree in interpreting them literally as teaching that the Sun is in the heavens and circles around the Earth with great speed, while the Earth is very far from the heavens, at the center of the world and is immovable. Reflect then in your wisdom whether the Church can tolerate that Scripture be interpreted in a way contrary to the opinion of holy Fathers and all modern commentators, both Latin and Greek. Nor can one answer that this is not a matter of faith since if it is not a matter of faith *ex parte objecti*, it is a matter of faith *ex parte dicentis*. And so it would be as heretical to say that Abraham did not have two children and Jacob twelve, as it would be to say that Christ was not born of a virgin, because both are said by the Holy spirit through the mouth of the prophets and apostles. (Quoted in: Santillana 1958, p.99)

This passage indicates how compelling R-reasons were for Bellarmine when he was thinking about some mixed issues. This was certainly neither his personal idiosyncrasy nor was it a peculiarity of Catholics. For Luther and Calvin, too, the authority of the Bible was so overwhelming that for them a discussion of the possible truth of Copernicanism was out of the question. Obviously, for many people the mere suggestion to open the debate on some of the mixed issues painfully touched the religious nerve itself.

Copernicanism is only the historically most prominent instance of such a conflict. Other examples of “empirical blasphemies” abound. For instance, when James Hutton, one of the founders of modern geology, first advanced the hypothesis of a very old age of our planet, this claim was in itself regarded by his opponents as an open defense of atheism (Hallam 1983, p.34). Buffon fared much worse: he was forced by the theological faculty of the Sorbonne to publish a recantation, which ended with these words: “I abandon everything in my book respecting the formation of the earth, and generally all which may be contrary to the narrative of Moses.” (Quoted in: Lyell 1872, p. 57) Likewise, all beliefs about Jesus Christ have been for a long time so strongly dominated by R-reasons that the idea of secular investigation of Jesus’ life was simply unthinkable until the 18th century (when H. S. Reimarus wrote the first “deconstructing” biography, to the consternation of his contemporaries). In particular, the story of resurrection remains to date one of the most cherished (and most vulnerable) mixed issues.

Since it belongs to the very hard core of Christian doctrine, bringing S-reasons to bear on this topic is bound to be resisted and perceived as a kind of *hubris*. For educated people today it may be very difficult to believe that someone could really and literally rise from the dead. But one is hard put to have doubts about this, and at the same time preserve the true faith. The New Testament issues a warning in uncharacteristically (and dangerously) clear words:

Now if Christ be preached that he rose from the dead, how say some among you that there is no resurrection of the dead? But if there be no resurrection of the dead, then is Christ not risen: And if Christ be not risen, then is our preaching vain, and your faith is also vain. Yea, and we are found false witnesses of God; because we have testified of God that he raised up Christ: whom he raised not up, if so be that the dead rise not. For if the dead rise not, then is not Christ raised: And if Christ be not raised, your faith is vain. (I Cor, 15:12-17)

It is remarkable that even now at the beginning of the 21<sup>st</sup> century there still seems to be little readiness to resort to allegory or symbolism in order to make the story of resurrection more palatable to the science-impregnated minds of contemporary people. In a recent address on the topic, Pope John Paul II was no less adamant than St. Paul: "Christ's Resurrection is the strength, the secret of Christianity. It is not a question of mythology or of mere symbolism, but of a concrete event. It is confirmed by sure and convincing proofs. The acceptance of this truth, although the fruit of the Holy Spirit's grace, rests at the same time on a solid historical base." (April 21, 1996, *Regina caeli*)

Why does religion not avoid these embarrassing collisions with science once and for all simply by limiting itself to strictly religious issues and by cautiously keeping its R-reasons away from all mixed issues? It is fairly obvious why such an isolationist strategy would not do. Historical religions like Christianity teach that God is present in *this* world, and that his spectacular and very real interventions at particular times are actually the most important episodes in the history of our universe (e.g., the creation of the world, original sin, miracles, Christ's resurrection, etc.).

In other words, it is not just some kind of coincidence that most creeds happen to contain doctrinal segments with some statements about empirical reality. There is an inherent logic that absolutely mandates such commitments: the very credibility of religious beliefs is at stake here. Namely, if a religious dogma is stripped of all immanent traces of God's actions in this world, and if God is consequently transferred to completely inaccessible regions of a mysterious trans-empirical reality, how will this so thoroughly emptied existence then be distinguished from a pure figment of our imagination? As a 19th century Princeton theologian has put it: "[A]bsent God, who does nothing, is to us no God." (Quoted in: White 1898, vol. I, p.79) One of the leading anti-evolutionists today, Phillip Johnson, also thinks that "[t]he implication of evolutionary biology ... is perhaps not exactly that God does not exist. If God does exist, however, existing is about the only thing He has ever done. God is permanently unemployed... [Such] a view of God as creator ... tends to fade away into unreality." (In a debate with William B. Provine at Stanford University, April 30, 1994.) In a similar tone of voice the prominent Christian philosopher Peter Van Inwagen has resolutely rejected the conception of God as a "voyeur" (Van Inwagen 1995, pp.143-144).

Most religions have a kind of "cosmological imperative" built into their foundation. The historian Herbert Butterfield explains this in a way that can hardly be improved upon:

An historical religion, by the terms of its very existence, implies a certain conception of God, a certain view of the universe, a certain doctrine about human life and a certain idea concerning the course of things in time. By its fundamental assumptions it insists upon a God who stretches out His arms to human beings presumed to be groping in grave distress and blind bewilderment. It asserts that eternity is brought into relation with time, and that in the supra-terrestrial realm, the kingdom of the spirit is not locked away, for it is here and now, and the two planes of existence intersect... On this view there can be no case of an absentee God leaving mankind at the mercy of chance in a universe blind, stark and bleak. (Butterfield 1960, pp.157-8)

In theological literature the fact that the human relation to God essentially depends on something that happened in Palestine about two thousand years ago is sometimes called “the scandal of particularity” (Hebblethwaite 1980, p.106). I would rather call it “the curse of particularity.” For, to be taken seriously, religion needs a God that is at least to a certain extent *empirically* engaged in this world. Of course, it does not have to be such an everyday interference in ephemeral human conflicts as, say, the passionate participation of Homeric gods in the Trojan War. But on the other hand it may be very difficult to nurture deep religious feelings toward gods, like those in Epicurean philosophy, who withdraw themselves completely to distant ethereal regions, showing no interest whatsoever in human affairs. Authentic faith appears to need desperately *some* sign, however meager, of God’s involvement in specific events with determinate spatio-temporal coordinates. For this reason, it is even nowadays when physics, biology and cosmology have drastically narrowed down the possibilities for naturalistic manifestations of God’s existence that religion is still compelled by its internal logic to look for the most appropriate place in the austere science-driven *Weltanschauung* to interject its alleged signs of otherworldly influences. The search just has to continue despite the fact that it obviously carries a high risk that the new foothold will also soon be lost for religion, and that church authority will only suffer another intellectual defeat. An amusing illustration of this compulsive religious tendency to legislate about empirical issues is given by Stephen Hawking:

The Catholic Church had made a bad mistake with Galileo when it tried to lay down the law on a question of science, declaring that the sun went around the earth. Now, centuries later, it had decided to invite a number of experts to advise it on cosmology. At the end of the conference the participants were granted an audience with the pope. He told us that it was all right to study the evolution of the universe after the big bang, but we should not inquire into the big bang itself because that was the moment of Creation and therefore the work of God. I was glad then that he did not know the subject of the talk I had just given at the conference—the possibility that space-time was finite but had no boundary, which means that it had no beginning, no moment of creation. I had no desire to share the fate of Galileo, with whom I

feel a strong sense of identity, partly because of the coincidence of having been born exactly 300 years after his death! (Hawking 1988, p.116)

In recapitulation, the situation looks as follows. On the one hand, a religion purged of all empirical content has the advantage that it cannot be threatened by new scientific knowledge; but the trouble is that its talk about God starts to ring hollow, and too easily comes to resemble a mere fantasy. On the other hand, a religion with empirically described effects from the supernatural domain has the advantage that its God does not suffer conceptually from a deficit of reality or, so to speak, from ontological anemia; but for this very reason the development of science can put into doubt the purported signs of his presence in the world.

Despite all the risks involved, a religion that aspires to be more than a fairy-tale *must* go outside its proper domain of purely religious issues: it just *has* to direct the arrow of its R-reasons toward some empirical issues (turning them thereby into mixed issues). If all empirical implications of a religion are removed by some sort of theological surgery, then, as one scholar aptly put it, the remaining corpus might well be a corpse instead (King 1964, pp.108-109). Therefore, the historical conflicts between religion and science are not contingent and avoidable; on the contrary, they necessarily follow from the inherent apologetic need that God should have some connection with this world—that *Deus* be not entirely *absconditus*. The final outcome of the conflicts between religion and science is well described by Whitehead:

In the first place for over two centuries religion has been on the defensive, and on a weak defensive. The period has been one of the unprecedented intellectual progress. In this way a series of novel situations have been produced for thought. Each such occasion has found the religious thinkers unprepared. Something, which has been proclaimed to be vital, has finally, after struggle, distress, and anathema, been modified and otherwise interpreted. The next generation of religious apologists then congratulates the religious world on the deeper insight which has been gained. The result of the continuous repetition of this



undignified retreat, during many generations, has at last almost entirely destroyed the intellectual authority of religious thinkers. (Whitehead 1957, p.214)

Another very condensed but equally good historical summary is given by Peirce:

[R]eligion has found herself compelled to define her position; and, in doing so, has inevitably committed herself to sundry propositions, which, one by one, have been, first questioned, then assailed, and finally overthrown by advancing science. Seeing such a chasm open before her feet, religion has at first violently recoiled, and at last has leapt it, satisfying herself as best as she might with an altered creed. In most cases the leap has not seemed to hurt her; yet internal injuries may have been sustained. Who can doubt that the church really did suffer from the discovery of the Copernican system, although infallibility, by a narrow loophole, managed to escape? In this way, science and religion become forced into hostile attitudes. Science, to specialists, may seem to have little or nothing to say that directly concerns religion; but it certainly encourages a philosophy which, if in no other respect, is at any rate opposed to the prevalent tendency of religion, in being animated by a progressive spirit. There arises, too, a tendency to pooh-pooh at things unseen. (Peirce 1893, pp.351-352)

Since Augustine's work *De genesi ad litteram* non-literal interpretations of the Bible have become a standard move in an effort to save Christian dogma from a disturbing clash with empirical truths. But although this strategy of revising the meaning of the sacred texts was partly successful in that it usually brought a temporary relief from embarrassment, the long-term effects were, as Peirce said, religion's "internal injuries." Two particularly damaging consequences for religion that I shall here consider in turn are: (a) the break of continuity with the past, and (b) the impotence of R-reasons.

### 3. THE BREAK OF CONTINUITY WITH THE PAST

In the present enlightened age dominated by the allegorical reading of the Bible people tend to forget that it was until quite recently that this book was widely regarded as a reliable source of knowledge about the history and the structure of the universe. True, when in the 17th century archbishop James Ussher concluded

on the basis of his studies of Old Testament genealogies that the world had been created in the year 4004 B.C., on the 26th October at 9 o'clock a.m. (Hallam 1983, p.82), the insistence on such a degree of precision probably looked exaggerated even to his contemporaries. But it is nevertheless undeniable that all Christians did believe for a long time that the chronology of the book of Genesis was very nearly correct. For instance, up to the relatively recent geological estimates of the age of our planet the biblical story about the six days of creation was not open to so extremely elastic interpretations as it is today. Some commentators of course argued that the word "day" in the story did not necessarily refer to an exactly 24 hour time interval (as Thomas Aquinas did think, by the way), but there was no doubt that the word signified a fairly short duration of about that order of magnitude. In that intellectual context, a suggestion that "day" ought to be understood as "millions of years" would be absolutely inconceivable as a possible interpretation of the Bible.

But wait. If these enforced changes in religious doctrines really required such momentous hermeneutical reversals, how come that these radical reinterpretations of the Bible did not produce massive intellectual shocks among the faithful? The answer is of course very simple: new interpretations advanced slowly and gradually. Revisions of the meaning of sacred texts always came in a sequence of steps, whereby it took a long time for any doctrinal shift to be officially approved. The empirical "heresy" typically passed through a tortuous and protracted three-stage process: resistance—silence—grudging acceptance. This explains how it was possible for religious views to be so fundamentally transformed and yet preserve the appearance of continuity. However, in view of all these major reconstructions and reinterpretations accumulated over time it seems legitimate to raise a question about how much in common then really remained between beliefs of contemporary Christians and, say, the first followers of Jesus Christ. To what extent has the current religious doctrine, which had been so repeatedly and considerably

modified in a number of important segments, actually retained a connection with the original Christian world view? Has the *identity* of content between these two creeds been preserved after all?

Let me explain this difficulty with an analogical story. Suppose that a woman—call her Ann—comes to believe that her college professor John Smart has just received the Nobel Prize in economics; she has overheard him saying this to a group of friends, and besides he is known as a person who simply cannot tell a lie. Soon she breaks the news to Bill, who immediately goes to read the newspaper report and is surprised not to find any Smart among this year’s Nobel Laureates. Since Bill considers John (and Ann) completely trustworthy he concludes that Ann must have misunderstood John: perhaps John only said that he had been among the official candidates for the Nobel Prize. Then Bill promptly transmits this belief to Carrie. However, Carrie is being told by a friend who knows about these things that John’s name had definitely not been among those proposed to the Nobel committee. Also clinging firmly to the conviction that nobody was lying, Carrie infers that John must have actually said something to the effect that his research results were being regarded by reputable economists as worthy of the Nobel Prize. Next, Diana acquires this belief but she incidentally learns that John’s publications are all buried in obscure journals and that they remained without any echo in the economics literature. Perplexed but still unwilling to consider the possibility that John was lying, she decides that in the conversation with friends which Ann has overheard John probably just said that he had *dreamed* about receiving the Nobel Prize.

We have a four-step succession of beliefs here: Ann → Bill → Carrie → Diana.

- (A) John received the Nobel Prize.
- (B) John was among the candidates for the Nobel Prize.
- (C) Some reputable economists thought John deserved the Nobel Prize.
- (D) John dreamed about receiving the Nobel Prize.

Ann starts with a first-hand report from a source she regards as absolutely reliable. Bill inherits this belief, shares the unlimited trust in the information-generator, but is eventually forced to modify his belief in order to accommodate a highly compelling piece of adverse evidence. Carrie in turn acquires the modified belief from Bill, but soon she also has to change that belief under the impact of new empirical information. At last, the erosion of the belief ends with Diana.

All of our four subjects believe something about John Smart and the Nobel Prize in economics. But it would seem ridiculous to argue that Ann and Diana, who are at several removes from each other doxastically, believe the *same* thing about John and the Nobel Prize. It would be no more convincing to argue that, beneath the surface of disagreement, beliefs (A) and (D) still retain a substantial measure of shared content. No doubt, we could (if we wanted) describe the two beliefs in such a way that they *appeared* to have something in common. For instance, we could try to emphasize their similarity by insisting that (D) actually agrees with (A) that John received the Nobel Prize, on the grounds that in a certain sense (D) does also say that John received the Nobel prize—namely, *in his dreams!* Indeed, one can always *post festum* resort to this kind of hermeneutical hocus-pocus whenever there is a strong need to downplay the difference between the two far ends of a long process of belief-transformation. But surely such a deceptive and tendentious description cannot alter the fact that the respective beliefs are essentially incongruous.

For example, if Ann were suddenly supplied with all the information available to Diana, and if she were therefore forced to move immediately from (A) to (D) she would certainly never describe her cognitive change as keeping the same belief, only in a somewhat changed form. Rather, she would have to admit that in the light of all the new evidence her initial belief was conclusively shown to be *false*.

This analogy prompts the following question about our main topic. Has not the gradual accumulation of major reinterpretations of the Bible also at last produced a cognitive gap between today's believers and the earliest Christians, so

that the *identity* of religious beliefs in these two mutually distant historical periods becomes dubious? Take that ancient and extremely anthropocentric picture of the cosmos dominated quite non-allegorically by such events as the six-day creation of the world, the expulsion of Adam and Eve from the garden, Noah's ark full of animal pairs, Joshua's halting of the Sun's motion, the return of Lazarus from the dead, the immaculate conception, Jesus' resurrection, and, last but not least, the firmest conviction of the first century Christians that the day of judgment was quite imminent (*i.e.*, that it was definitely to be expected even before most of them would die). If that enchanted world is contrasted with the currently accepted picture of a grimly indifferent and totally purposeless universe in which, for all that matters, the laws of nature have driven God out of cosmological business, it is very hard to see the contemporary enlightened theology that tries to absorb most of these contemporary scientific ideas as just a slightly refined version of the same view of God and the world that had been adopted by Jesus' first disciples. On the contrary, it seems much more plausible to say that through the series of strained reinterpretations of Scripture its original message had been slowly changed and diluted until it has eventually been supplanted by another and essentially different content. Lichtenberg must have had something like this in mind when he wrote, with considerable irony: "If our theology continues so little by little to transform itself into theonomy, as astrology had transformed itself into astronomy, then we shall soon have to ask whether it would not be better to call the *New Testament* an Intermediate Testament." (Lichtenberg 1974, p.27)

#### 4. THE IMPOTENCE OF R-REASONS

In an attempt to keep up with the *Zeitgeist* religion has been steadily moving in the "wrong" direction: away from the doctrine of the first Christians, which was officially its main source of inspiration and authentication, and ever closer to the standpoint that dangerously resembled an atheism with a fig leaf. But there is an

additional way in which science undermines religion: by disclosing the logical impotence of R-reasons.

The long conflict between science and religion over a number of mixed issues has finally resulted in a plain defeat of religious pretensions to knowledge in that domain. Consequently, the sphere of operation of R-reasons has become extremely restricted. They are today invoked mainly in the context of purely religious issues. True, the arrow of R-reasons is still occasionally being directed to some of the mixed issues, but as a rule only when science leaves the respective questions without answer, or when it is concluded (be it prematurely) that a given topic will forever remain inaccessible to scientific knowledge. It is understandable that, after its inglorious record of confrontations with science, religion least of all wants new conflicts, and that it therefore tends to retreat from mixed issues, especially when an unfriendly scientific consensus is in the offing.

It might perhaps seem that by such a careful strategy of avoiding the dangerous ground of mixed issues altogether religion could hope to preserve the integrity of its beliefs about the main thing, *i.e.*, about purely religious issues. But this is not so. I will try to show that the surrender of religion in the battle over mixed issues seriously undermines the credibility of R-reasons in their proper field as well. Briefly, the historical fact that R-reasons have been so spectacularly and fundamentally discredited in their attempts to encroach on the territory of mixed issues must give rise to some doubt whether they are then, after all, good reasons for believing *anything*.

If cognitive reasons are to cut any ice, they must at least to some extent influence cognitive deliberations about topics where they are considered relevant. They need not be decisive factors, but they have to be *one* of the inputs affecting the final outcome. However, when the two fundamentally different cognitive reasons (S-reasons and R-reasons) clashed in the past, these conflicts were usually resolved by an all-out capitulation of R-reasons: at one point or other they have been

completely withdrawn from the “zone of combat,” and religion just stopped using them to impose its view on a given mixed issue. It should be specially emphasized that this cognitive abdication of R-reasons was not prompted by an autonomous and independent indication of their irrelevance for the question at hand, but always and exclusively by the unrelenting and in the end unbearable pressure of S-reasons.

There is something very peculiar about such a capitulation of religious epistemic aspirations, because typically R-reasons are extraordinarily inflexible and unyielding. For instance, when two kinds of R-reasons deriving from two different faiths happen to collide in their fight for souls, what we usually see is not openness to persuasion and readiness to accommodate the arguments of the other side. Rather, as Robert Audi put it, “a clash of gods is like a meeting of an irresistible force with an immovable object” (Audi 1989, p.296). Strangely enough, despite this very characteristic rigidity, R-reasons are simply blown away just in those situations where their force is put to a crucial test, *i.e.*, when they pull in the opposite direction from S-reasons, and when they have the best opportunity to prove their mettle.

What typically happens is the following: when contrary S-reasons reach a certain force that we can call the degree of dangerous plausibility those who, up to that time, had tenaciously insisted on the supreme authority of R-reasons suddenly make an about-face. Realizing that their original belief is crumbling under the tremendous weight of S-reasons, but being unable to admit the defeat of R-reasons (God’s word cannot be wrong!), they begin to claim that, in reality, R-reasons *had never supported that discredited view* in the first place. The truth is only, they now say, that people *mistakenly* believed that R-reasons had supported that view. The message is clear: in each particular case the error is not to be blamed on the wrong information coming through revelation but merely on the human misunderstanding of the “true” meaning of revelation.

There is a crucial question to be asked here: if there was so much confusion about revelation in those sections of the Bible where, in the most natural interpretation, it appeared to have been unambiguously describing empirical reality, how can one be so sure, then, that one well understands those sections that speak about purely religious issues? Put differently, if those who had let themselves be guided by R-reasons in the past ended up by being so colossally wrong about the world, is it then reasonable, after the whole series of such cognitive miscarriages, to continue with undiminished and unlimited confidence to follow these same R-reasons in the search for purely religious truths?

An analogy may help drive the point home. Imagine a person, let us call him Professor Heidenberg, who is universally recognized as a supreme expert in both physics and philosophy. You happen to know virtually nothing about either of these fields, and out of curiosity you start to read Heidenberg's two famous introductory textbooks, *Physics Without Tears* and *Philosophy For Beginners*. You find the content of these books clear and straightforward. Therefore, relying on the author's unimpeachable authority, you accept everything that he says there as true. However, studying physics in more depth you come to realize that some of the things you have learnt from Heidenberg are actually incorrect. Nevertheless, since it seems inconceivable that such a first-rate scholar could go astray about the basics in his own field of competence, you conclude that you must have misunderstood him. For instance, although there is an explicit claim in his brief account of classical mechanics that *weight* is a scalar quantity that remains invariant with respect to location, you reject an absurd suggestion that Professor Heidenberg should not know that weight is in fact a vector quantity whose value varies with the position of a body in a gravitational field. Hence you decide that by "weight" he actually must have meant *mass*, and that he was deliberately expressing himself a bit loosely (perhaps because he thought that insisting on full conceptual rigor would be ill-advised at the level of such an elementary introduction to physics).



Imagine, however, that you soon discover with bewilderment that *Physics Without Tears* is in fact full of similar sections that are simply false in their literal and most natural interpretation. Nevertheless, with the help of your independently acquired knowledge of physics and with some exegetical acrobatics, you manage to reinterpret all these embarrassing passages so that in the end they come out as saying something quite different and something quite true. In this way you can perhaps convince yourself that Heidenberg's credibility as a scientist is not damaged at all, despite the incontrovertible fact that those who learned physics solely from his textbook systematically acquired a number of erroneous or even silly beliefs.

Very well. But given all this, what should be your attitude toward Heidenberg's second masterpiece, *Philosophy for Beginners*? Remember, Heidenberg is equally highly respected among philosophers as among physicists. Suppose, however, that unlike the case of physics, you have not gained any collateral knowledge in philosophy that could enable you to reconstruct the "real" meaning of the author's words in this new domain. Your interpretative task becomes truly formidable here because you have every reason to believe that Heidenberg, having remained faithful to his enigmatic style, had again expressed himself equivocally, and that therefore, most probably, many of his central statements (you do not know which!) are false, taken literally. Now you are left with absolutely no clue about how to interpret his assertions non-literally in order to "correct" them. But then you are bound to ask yourself: is there anything at all that you can learn about philosophy from that book if, given its Pythian pronouncements, you know that any sentence in it might have been easily intended in a completely different sense from the one that forces itself upon you as its by far most natural interpretation?

The moral of this analogy should be obvious: the allegorical interpretation of Scripture is a double-edged sword. On the one hand it does save God's message from being wrong, but on the other hand it makes the message vague to the point

of unintelligibility. To spell it out: if those sections in the Bible that looked like direct and unambiguous descriptions of empirical reality had to be subjected to a major hermeneutical surgery in order to bring them in accordance with the truth, how then in the light of such stunning interpretative reversals can anyone pretend to understand well the sections about purely religious issues? Maybe *they* are also grotesquely false in their most natural interpretation; maybe *they*, too, have to be understood in a completely different way in order to reveal some hidden and profound truth. For, indeed, if a seemingly simple sentence from the book of *Genesis* like "God created man" is semantically so stretchable that it can even survive the discovery that *Homo sapiens* is the product of a gradual, several billion years long, and largely random-driven evolution of organisms from the primeval soup, perhaps in view of such tectonic shifts of meaning a reasonable believer ought to have some doubts about how much he then really understands those incomparably more cryptic biblical sentences about faith mysteries.

Briefly, if to preserve the credibility of Scripture you insist on far-fetched reinterpretations of many *prima facie* transparent sentences (because you can no longer accept them in their manifest sense), the price you pay is that you cover the whole text with a thick fog of ambiguity. The integrity of the message is undermined not so much by its having been disproved as by the fact that it now becomes entirely unclear what the very content of the message is in the first place.

The historical conflict between science and religion has ended with a triumph of Galileo's view expressed in his letter to Castelli: "Scripture being therefore in many places not only liable to, but necessarily requiring, expositions different from the apparent meaning of the words, it seems to me that in physical disputes it should be reserved to the last place." (Quoted in: Drake 1980, p.61) Expressed in the terms of this essay: in solving mixed issues R-reasons should be assigned the last place, or better still, they should be entirely switched off in this context. But if R-reasons have been so thoroughly demolished in one section of their field of

operation (where they had been defeated by S-reasons), it seems that our confidence in R-reasons must also be shaken, at least to some degree, in that domain where (fortunately for them?) their force had not been tested by any alternative type of cognitive reasons. Since it turns out that R-reasons have systematically misled us in those contexts where we were later lucky to find an independent way to discover the right direction, it would appear that one ought to look at them with suspicion even there where they remain the only kind of reason that is available.

The blade of R-reasons was blunted by their repeatedly but unsuccessfully having been used to impose solutions on mixed issues. With time that seriously damaged instrument therefore became useless for resolving even the purely religious issues. Essentially, what happened had been anticipated a long time ago by Kepler in his truly prophetic warning:

*Acies dolabrae in ferrum illisa, postea nec in lignum valet amplius. Capiat hoc cujus interest.*

“If you will try to chop iron, the axe becomes unable to cut even wood. I warn those whom it concerns.” (Quoted in: Whewell 1847, vol. I, p.693)

##### 5. WHAT IS TO BE DONE?

If I am right that science undermines faith in the way discussed above, what follows? There are three possible responses.

(1) *Atheist science*

Some conclude that if science and religion are really in conflict, then obviously something has to give. If you accept science, and if you are coherent, your faith has to go. In particular it is scientists who should have most troubles retaining religious beliefs. If, for psychological reasons, they cannot break off from their commitment to faith, it seems that they at least ought to take care not to permit religion to influence them *qua* scientists. In a brutal formulation of William Provine: "Scientists should check their brains at the church house door." (Quoted in: Scott 1996, p.25)

(2) *Christian science*

The second opinion is that in thinking about apparent conflicts between science and religion one should take into account *both* scientific *and* religious considerations. For instance, if the book of *Genesis* is in its most natural interpretation incompatible with the theory of evolution, why should we be so sure in advance that it is the meaning of the biblical text that has to be reinterpreted? Who says that this conflict is perhaps not best resolved by rejecting or at least modifying the theory of evolution? Note that this line of argument does not have to be committed to a fundamentalist claim that every single biblical statement is true in its most literal interpretation. In a much subtler version (see especially Plantinga 1991-2) it is merely argued that the passages in Scripture that ostensibly speak about some mixed issues should carry at least *some* weight for Christians when they form beliefs about these topics. Occasionally, some of these passages will have to be reinterpreted in the face of overwhelming scientific evidence against what they seem to say. Again, at other times one may be perfectly entitled not to give up one's belief so easily. It all depends on weighing the strength of reasons that pull in opposite directions.

The basic point is that any believer understands the Bible in a certain way, and if he takes his faith at all seriously he will then take his reading of the sacred

text as a *prima facie* reason for believing some things about the world. He may be non-dogmatic about it in that he may be ready to modify his religiously inspired empirical belief if the circumstances so require; but before changing his mind he seems to be fully within his rights to ask to be presented with a contrary reason that is *better* than the R-reason that is currently guiding his belief. In this picture, R-reasons are in principle defeasible and sometimes defeated, but it is argued that a number of them should still be recognized as cognitive reasons with *some* force.

The main problem with this view is how to integrate the two fundamentally different kinds of reasons into a unified system of beliefs. As yet no one has given any hint whatsoever about how to devise a common metric for S-reasons and R-reasons which would enable Christians to compare these two types of cognitive reasons. No one has shown how to distill out of them a synoptic and all-inclusive perspective that would transcend both “biases,” as it were.

Despite much talk about being guided by both kinds of reasons, what this strategy actually comes down to is the following. R-reasons are only used at the first stage when they merely serve to mark those segments in scientific theories that are in friction with one’s religious views. Next, this strongly stimulates one to look for weaknesses, objections, and counter-arguments that would justify withholding assent to the embarrassing scientific claims, and that would ease one’s cognitive dissonance. After that moment, however, the standard S-reasons completely take over: one tries now to show, *by invoking only ordinary scientific considerations*, that the currently accepted view in science should be modified in a way that, gratifyingly, just happens to coincide with one’s initial, religiously motivated beliefs about the issue.

Basically, R-reasons set a cognitive destination (*terminus ad quem*), and from that point onwards one’s task is, by using only S-reasons, to find a way to get there. A good illustration of how this works in practice comes from a leading creationist, Henry Morris. Troubled by empirical objections to the biblical story about the flood

and Noah's ark he decided to explore the issue himself—by taking up graduate studies in hydraulics (major) and geology (minor) at the University of Minnesota. He said: "I was convinced that this was the best combination with which to develop a sound system of deluge geology." (Quoted in: Webb 1994, p.159) Quite predictably, everything went according to plan and the new system was soon in place; but somehow this biblically inspired "hydraulic geology" failed to convince (others).

Although it is at the intellectual level incomparably more sophisticated, Plantinga's idea of Christian Science suffers from the same shortcoming. He starts by proclaiming, not at all implausibly, that one should form belief on the basis of *all* reasons one has concerning a given issue. Therefore, the argument continues, since Christians believe some things on the basis of their reading of Scripture, these reasons should count for something in their cognitive deliberations. That is, why should their opinion on some mixed issues be determined by only a part of what they regard as relevant? Instead of relying exclusively on S-reasons, would it not be more reasonable for Christians to form belief on the basis of *all* things considered (*i.e.*, by taking into account R-reasons as well, since they are *also* their cognitive reasons)?

Unfortunately, Plantinga never comes close to showing how such an all-encompassing picture of reality is to be obtained from the two allegedly one-sided perspectives (scientific and religious). Rather, he again singles out some universally accepted Darwinian claims that he finds objectionable on religious grounds, and he then criticizes them by invoking *only* S-reasons (like the incompleteness of the fossil record, the alleged impossibility of observing speciation, alleged problems with the molecular evidence for evolution, etc.). So, instead of delivering even the barest outline of a promised synthetic view that would *combine* R-reasons and S-reasons Plantinga actually tries to prove that, properly evaluated, S-reasons *already by themselves* undermine an opinion that, as a matter of fact, currently represents the

scientific consensus. But then his contribution has nothing to do with religion at all. If it is based exclusively on S-reasons, it should be judged on its scientific merits. And, to put it mildly, the prospects for his revolutionary ideas being taken seriously by biologists are not good.

The reason why, in his opposition to Darwin, Plantinga in the end falls back on S-reasons so completely is that even he does not seem able to envisage a way how to harness R-reasons and S-reasons in a joint epistemic enterprise that would not sound grotesque and ridiculous. These two kinds of reasons are so disparate and mutually incommensurable that any specific suggestion how to couple them together in our cognitive deliberations is bound to strike us as a bizarre opinion, or just a joke. The following example of inferring the temperature of the Hell on the basis of *both* S-reasons and R-reasons illustrates this perfectly:

The temperature of heaven can be rather accurately computed from available data. Our authority is the Bible: Isaiah 30:26 reads, *Moreover, the light of the moon shall be as the light of the sun and the light of the sun shall be sevenfold, as the light of seven days.* Thus heaven receives from the moon as much radiation as we do from the sun, and in addition seven times seven (forty-nine) times as much as the earth does from the sun, or fifty times in all. The light we receive from the moon is a ten-thousandth of the light we receive from the sun, so we can ignore that. With these data we can compute the temperature of heaven: The radiation falling on heaven will heat it to the point where the heat lost by radiation is just equal to the heat received by radiation. In other words, heaven loses fifty times as much heat as the earth by radiation. Using the Stefan-Boltzmann fourth-power law for radiation,  $(H/E)^4 = 50$ , where E is the absolute temperature of the earth (300°K), gives H as 798°K (525°C).

The exact temperature of hell cannot be computed, but it must be less than 444.6°C, the temperature at which brimstone or sulfur changes from a liquid to a gas. Revelations 21:8: *But the fearful, and unbelieving ... shall have their part in the lake which burneth with fire and brimstone.* A lake of molten brimstone means that its temperature must be below the boiling point, which is 444.6C. (Above this point it would be a vapor, not a lake.)

We have, then, temperature of heaven 525°C (977°F). Temperature of hell is less than 445°C (833°F). Therefore, heaven is hotter than hell. (From *Applied Optics*, vol. 11, No. 8, August 1972, p.A14.)

### (3) *Keeping the skeleton in the closet*

If science and religion clash, but if you are not happy with either atheist science or Christian Science, the only remaining alternative is an attitude that presently dominates anyway: suppressing awareness about the conflict. Although logic forbids contradictions, psychology allows plenty of room for them: it even supplies different ways for a person to continue to live comfortably while nurturing incompatible beliefs. One of these mental mechanisms is to keep the conflicting beliefs in different compartments of the mind, and simply never to bring them in contact. My guess is that this must account for most cases of *truly* religious scientists.

What does “truly religious” mean here? Well, what certainly should *not* count as a truly religious attitude is the famous Einsteinian talk of God, which has confused many but which is merely a *façon de parler* serving to express the physicist’s awe for the simplicity and beauty of the laws of nature. Another thing that should not count, either, is a religious affiliation that is just a way of showing one’s identification with a given community or subculture. A good operationalization of “truly religious” is “believing in a God to whom one may pray in expectation of receiving an answer.” This definition was used by James Leuba in his famous survey of scientists’ attitude toward religion (Leuba 1916), and again in a recent poll replicated in the same format by Larson & Witham (1997).

Both sources come out with the same figure of about 40% of scientists who are religious in the just explained sense. Larson and Witham seem to revel in the outcome because, as they say, “religious Americans will doubtless be pleased to know that as many as 40 per cent of scientists agree with them about God and immortality” (p.435). In a similar vein, they add that nowadays when the US scientific enterprise fights “a battle for federal funding” and wants to “promote the cause of science to taxpayers” the fact that more than one-third of scientists hold



beliefs “dear to many conservative Americans” may “evoke a sympathetic response,” showing that scientists are “just like us” (*ibid.*).

I wonder, however, whether it is really appropriate to try to endear scientists to people in the street by urging them to identify with the *minority* of scientists who may indeed be “just like us,” but only in the sense that, when it comes to matters of deep personal commitment, they (like most of their fellow citizens) balk at accepting the disturbing consequences of their own beliefs. Besides, this attempt to boost the public esteem of science has a serious problem with the remaining 60% of scientists, who are supposedly “not like us.” By the logic of Larson and Witham these scientists without faith would make science look “alien” or even “inhuman,” and to make things worse they would obviously better represent the views of the scientific community than their starry-eyed brethren. Moreover, since there is evidence that great scientists are significantly less likely to be religious than ordinary scientists the proposal to seek religious comfort and reassurance by looking only at scientists-believers would misrepresent the general import of scientific opinion both quantitatively and qualitatively.

In order to understand fully the relation between religion and science it is extremely important to note that it is not in the interest of either institution to emphasize the conflict. On the one hand, given the prestige that science currently enjoys the church cannot afford a further erosion of its reputation that would follow from the widespread awareness of the incompatibility of its dogma with contemporary scientific theories. On the other hand, in the light of the fact that nowadays many people are still religious (in one way or another), scientists should expect that a wider recognition of the atheistic implications of their views would damage the public image of science, and that it could even adversely affect the funding of science. As William Provine says (Provine 1988, p.69), there is much intellectual dishonesty in these discussions.

To pick a quite recent example, consider an article from the prestigious journal *Sciences* (published by the New York Academy of Sciences) in which Eugenie C. Scott, executive director of the National Center for Science Education, rebukes those who pit science against faith: “Clearly, [some] writers agree with creationists that there can be no middle ground between science and religion. To them I can only say: Most Americans have already made their choice to be religious. Now you must choose which you prefer—a religious population that accepts evolution or a religious population that rejects it—and decide what you can do to make that choice a reality.” (Scott 1996, p.25)

Although it has become quite common today for people to woo public opinion by hiding the unwelcome consequences of their own views, rarely do we hear such an open call to the whole profession to be “economical with the truth” about those aspects of its enterprise that run counter to the strongly held views of the majority. It must be conceded, though, that Scott may well be right about something. Perhaps, the fact of human religiosity is indeed a fixed point that is unlikely to be altered, and in view of this persistence of faith maybe it is mainly science that would be harmed by the broader recognition of their mutual antagonism. It is possible, therefore, that for the purpose of making public opinion more favorably disposed toward science it really would be better not to spread the word about its conflict with faith. But then again, however obstinately a given fact is denied or brushed under the carpet, it will not thereby cease to be a fact.

#### REFERENCES:

- Audi, R. (1989), “The Separation of Church and State and the Obligations of Citizenship”, *Philosophy and Public Affairs*, **18**, pp.259-296.
- Butterfield, H. (1960), *Christianity and History*. London: Collins Fontana Books.
- Dawkins, R. (1986), *The Blind Watchmaker*. Harmondsworth: Penguin.
- Drake, S. (1980), *Galileo*. Oxford: Oxford University Press.
- Hallam, A. (1983), *Great Geological Controversies*. Oxford: Oxford University Press.

- Hawking, S. W. (1988), *A Brief History of Time: From the Big Bang to Black Holes*. Toronto & New York: Bantam Books.
- Hebblethwaite, B. (1980), *The Problems of Theology*. Cambridge: Cambridge University Press.
- King, W. L. (1964), *A Thousand Lives Away: Buddhism in Contemporary Burma*. Cambridge, Mass.: Harvard University Press.
- Larson, E. J. & Witham, L. (1997), "Scientists Are Still Keeping the Faith", *Nature*, **386**, pp.435-436.
- Leuba, J. H. (1916), *The Belief in God and Immortality: A Psychological, Anthropological and Statistical Study*. Boston: Sherman, French & Co.
- Lichtenberg, G. C. (1974), *Aphorismen*. Stuttgart: Reclam.
- Lyell, C. (1872), *The Principles of Geology*. 11th ed.: New York: D. Appleton & Co.
- Peirce, G. S. (1893), "Marriage of Religion and Science", in G. S. Peirce, *Selected Writings*. New York: Dover Publications, 1958.
- Plantinga, A. (1991-1992), "When Faith and Reason Clash: Evolution and the Bible", *Christian Scholar's Review*, **21**, pp.8-32.
- Provine, W. B. (1988), "Progress in Evolution and Meaning in Life", in M. H. Nitecki (ed.), *Evolutionary Progress*. Chicago: University of Chicago Press.
- Santillana, G. (1958), *The Crime of Galileo*. London: Heinemann.
- Scott, E. C. (1996), "Monkey Business", *Sciences*, **36**, pp.20-25.
- Van Inwagen, P. (1995), *God, Knowledge and Mystery*. Ithaca: Cornell University Press.
- Webb, G. E. (1994), *The Evolution Controversy in America*. The University Press of Kentucky.
- Whewell, W. (1847), *Philosophy of the Inductive Sciences*. London: Parker.
- White, A. D. (1898), *A History of the Warfare of Science with Theology*. New York: Appleton & Co.
- Whitehead, A. N. (1957), "Religion and Science", in M. Gardner (ed.), *Great Essays in Science*. New York: Washington Square Press.