# Could There Be Another Galileo Case?

## Galileo, Augustine and Vatican II

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## Abstract

In his 1615 letter to the Grand Duchess Christina of Lorraine, Galileo argues for a "principle of limitation": the authority of Scripture should not be invoked in scientific matters. In doing so, he claims to be following the example of St Augustine. But Augustine's position would be better described as a "principle of differing purpose": although the Scriptures were not written in order to reveal scientific truths, such matters may still be covered by biblical authority. The Roman Catholic Church has rejected Galileo's principle, opting rather for Augustine's, leaving open the possibility of future conflicts between scientists and Church authority.

[1] Few scholars of religion seem familiar with the theological writings of one of the founders of modern science, Galileo Galilei (1564–1642). In these writings, which deal with the interpretation of the Bible, Galileo tries to defend his espousal of Copernican astronomy against his critics. He does so by drawing a sharp distinction between questions of religion and questions of science, justifying this by claiming that he stands in a long tradition, one reaching back at least as far as St Augustine (354–430). Galileo's position ought to be of considerable contemporary interest, for in our own day his strategy has become a common one, particularly among those who wish to avoid what Andrew Dickson White (1896) famously described as "the

warfare between science and theology."<1> Such writers argue that science and religion do not come into conflict because their areas within which they are competent differ. In the words of a recent work by evolutionary biologist Stephen Jay Gould (1999: 5), science and religion may both claim authority, but their areas of authority represent "non-overlapping magisteria."

[2] The purpose of this paper will be to re-examine Galileo's position and to establish just to what degree he could claim ancient precedent. In particular, I wish to ask whether Galileo's view can indeed find support in the writings of St Augustine. The paper will go on to offer some reflections on the position of the Catholic Church in our own time, as expressed in the second Vatican Council's document on biblical interpretation, *Dei Verbum*. On the question of science and religion, does the Catholic Church now hold to the same position as did Galileo? Or does its teaching suggest the possibility of another apparent conflict between religion and science? In a word, could there be another Galileo case?<2>

## Galileo and Augustine on Science and Scripture

[3] There are two works in which Galileo sets out the principles he wishes to be employed in interpreting the Bible. The first of these is a letter which he wrote to his friend and successor in the chair of mathematics at the University of Pisa, the Benedictine priest Benedetto Castelli. In December 1613 Castelli had enjoyed a lively breakfast meeting with the Medici rulers of Florence who were Galileo's principal patrons.<3> During that meeting, the Grand Duchess Christina of Lorraine had raised the issue of the compatibility of Copernican astronomy with biblical authority, the key text here being of course Joshua 10:12-13, in which the sun is said to cease its movement in response to Joshua's prayers. Galileo seems to have been well aware of the significance of these discussions. In his first major astronomical work, the *Sidereus Nuncius* or "Starry Messenger" of 1610, Galileo had suggested that his telescopic observations lent support to the Copernican view and it appears from Castelli's account that it was Galileo's endorsement of Copernicus's conclusions which had sparked the breakfast-time conversation. While Castelli seems convinced that he had (in his own words) "played the theologian with such finesse and authority" that he had allayed any fears on the part of Galileo's influential patrons (*GA*, 48), Galileo took the precaution of penning a lengthy reply to Castelli's letter (*GA*, 49–54), in which he set forth his views on biblical interpretation. This letter was widely circulated. In 1615 it formed part of the denunciation of Galileo to

the Holy Office by the Dominican friar Niccolò Lorrini. While the consultant who examined the letter cleared it of any charge of heresy, this was the beginning of the proceedings which were to issue in the condemnation of the Copernican opinion of 1616, on which Galileo's famous trial of 1633 would be based.

[4] It is not, however, this "Letter to Castelli" which will be the focus of the present paper, but a work which represents an expanded version of the same arguments. Galileo wrote this work in 1615, as he awaited a response from the Roman authorities to the accusations made against him. It takes the form of another letter, but this time addressed to the Grand Duchess Christina herself. I do not intend to enter into a detailed exegesis of this letter, a task which has been ably undertaken by previous commentators (Blackwell 1991: 75–82; McMullin 1998) . Nor do I wish to ask whether Galileo's position is internally consistent, a question about which some doubts can be raised (McMullin 1998: 314–319; Blackwell 1991: 78–82). All I want to do is to examine more closely Galileo's claim that he stands in continuity with St Augustine. It is this claim with which I wish to take issue.

[5] St Augustine is the religious authority to whom Galileo appeals most frequently in his letter to the Grand Duchess. Of the eight quotations from Augustine which Galileo employs, all but two are from Augustine's *De Genesi ad litteram*, the Church Father's commentary on the literal meaning of Genesis. This is a remarkable work, of which Augustine himself later wrote: "In this work there are more questions raised than answers found, and of the answers found not many have been established for certain."<4> It was not Augustine's first attempt at writing such a commentary. Shortly after his conversion in 387, he had written two books against the Manichees, who (in Augustine's words) "are in error not because they are mistaken in their interpretation of the Old Testament but because they completely reject it with impious scorn" (*LMG* 8.2.5). On that occasion, however, he was not able to carry through what he called "the laborious and difficult task of literal interpretation" consistently (*Retractions* 1.17 in *LMG* 1:2). and was forced to resort to allegorical interpretations where he found the biblical text too obscure. About three years later, he returned to the task, but on this occasion too it proved too much and he abandoned it before completion. In Augustine's own words, "I collapsed under the weight of a burden I could not bear." The result was a work which he later entitled, not unreasonably, *De Genesi ad litteram imperfectus liber* ("The Literal Meaning of Genesis: An Unfinished Book"). Having skirmished with the task once again in the final two books of his *Confessions*, Augustine began the *De Genesi ad litteram libri duodecim*

("The Literal Meaning of Genesis in Twelve Books") in the year 401, finishing it only fourteen years later.

[6] A helpful starting point for our discussion of Augustine's position is Ernan McMullin's excellent essay on Galileo's hermeneutics, found in the recently-published *Cambridge Companion to Galileo*. In this essay, McMullin tries to spell out the interpretive principles which Augustine outlines in *De Genesi ad litteram*. Among the principles which Augustine employs, McMullin argues, is one which he calls the "principle of limitation." As articulated by McMullin (1998: 298), this states that "since the primary concern of Scripture is with human salvation, texts of Scripture should not be taken to have a bearing on technical issues of natural science." The key text here is one found in chapter nine of book two of Augustine's commentary, where he deals with the question of "the form and shape of heaven according to Sacred Scripture." Here Augustine states that while "in the matter of the shape of heaven the sacred writers knew the truth, but . . . the Spirit of God, who spoke through them, did not wish to teach men these facts that would be of no avail for their salvation" (*LMG* 2.9.20).

[7] This passage from Augustine is one of those cited by Galileo in his letter to the Grand Duchess (*GA*, 94–95). In describing this as a "principle of limitation," McMullin is certainly offering a correct description of *Galileo's* intention. In a way which echoes his predecessor Johannes Kepler (1609: 60–66), Galileo understands Augustine's remark to mean that biblical authority should not be invoked in debates about astronomy. He develops his argument by making, in effect, two points. Galileo's first point is that it was not the intention of the sacred writers to teach astronomical matters. As he writes,

> it is the opinion of the holiest and most learned Fathers that the writers of Holy Scripture not only did not pretend to teach us about the structure and motions of the heavens and the stars, and their shape, size, and distance, but that they deliberately refrained from doing so, even though they knew all these things very well. (*GA*, 94)

Nor was it the intention of the Holy Spirit, who inspired the sacred writers, to teach us about the working of the heavens:

> the Holy Spirit did not want to teach us whether heaven moves or stands still, nor whether its shape is spherical or like a discus or extended along a plane, nor whether the earth is located at its center or on one side. . . . But if the Holy Spirit deliberately

> avoided teaching us such propositions, inasmuch as they are of no relevance to His intention (that is, to our salvation), how can one now say that to hold this rather than that proposition on this topic is so important that one is a principle of faith and the other erroneous? (*GA*, 95)

[8] These statements could be read as nothing more than an application of Augustine's words, cited above (*LMG* 2.9.20), regarding the purpose for which Scripture was given. But Galileo's second argument takes this idea further. He not only argues that the *purpose* of Scripture is different from that of the natural sciences; he draws the conclusion that the authority of the Bible is effectively *limited* to matters with which the natural sciences cannot deal.

> I would say that the authority of Holy Scripture aims chiefly [*principalmente*] at persuading men about those articles and propositions which, surpassing all human reason, could not be discovered by scientific research or by any other means than through the mouth of the Holy Spirit. (*GA*, 93–94)<5>

Galileo's attempt to limit the range of matters with regard to which biblical authority could be invoked is also evident later in the letter, when he makes reference to the Council of Trent (1545–63). The Council had decreed that in matters of faith and morals (*in rebus fidei et morum*) no one should presume to interpret the Bible in a way that is contrary to the teaching of the Church or to the consensus of the Church Fathers. In paraphrasing this passage Galileo makes a significant addition (not evident in at least one English translation, i.e.: *GA*, 109): he speaks of "those passages *alone* which are matters of faith or of morals" (*quei luoghi* solamente *che sono de Fide, o attenenti a i costumi*; emphasis mine). What Galileo wishes to highlight is what he sees as the restriction implicit in the Council's words.<6>

[9] Perhaps the clearest indication of Galileo's desire to limit biblical authority is to be found in a third set of passages, where he discusses what should be done when the results of the natural sciences seem to come into conflict with the Bible. Galileo first adopts the traditional line — for which he also cites Augustine — that biblical authority should not be invoked in opposition to the *firmly established* results of natural enquiry (*GA*, 96, 105). But he then goes further in suggesting that biblical authority should not be invoked to oppose any claims that might be firmly established *in the future*.

> I should think it would be very prudent not to allow anyone to commit and in a way

> oblige scriptural passages to have to maintain the truth of any physical conclusions whose contrary could ever be proved to us by the senses and demonstrative and necessary reasons. (*GA*, 96)

The same point is made later in the letter, where Galileo attributes his view (somewhat rashly, it seems) to the Church Fathers.

> The intention of the Holy Fathers is that in questions about natural phenomena which do not involve articles of faith one must first consider whether they are demonstrated with certainty or known by sensory experience, or whether it is possible to have such knowledge and demonstration [*o vero se una tal cognizione e dimonstrazione aver si possa*]. When one is in possession of this [*la quale ottenendosi*], since it too is a gift from God, one must apply it to the investigation of the true meanings of the Holy Writ at those places which apparently seem to read differently. (*GA*, 105; see also *GA*, 110).

Here, too, Galileo refers to matters which might be established in the future. It is not only matters which *have been* demonstrated with certainty which are — in practice — to be exempted from the authority of the Bible. It is also matters which are *capable of* being "demonstrated with certainty or known by sensory experience."

[10] There are, of course, some tensions in the letter at this point. For Galileo elsewhere endorses the traditional position that where the results of natural enquiry are *not* firmly established, the authority of Scripture is to be preferred (*GA*, 94, 102, 104; cf. McMullin 1998: 308–312). In apparent opposition to this,<7> the passages just cited suggest that — even where the results of natural enquiry are *not yet* firmly established — "it would be prudent" not to invoke biblical authority in opposition to claims which are capable of being established at a future date. (It is true that a similar "principle of prudence" [McMullin 1998: 294–295] is also found in Augustine, but what I am about to argue is that Galileo employs it in a most un-Augustinian way.) Since it is hard to see what scientific matters would be excluded from this category of the "demonstrable-though-not-yet-demonstrated" (McMullin 1998: 310), this comes close to what another commentator, Marcello Pera (1998: 367), has referred to as a "principle of independence," which holds that "science and religion belong to, and are competent on, two distinct and different domains." (It also corresponds to the position which, as we have seen, was recently endorsed by Stephen Jay Gould under the acronym NOMA: "non-overlapping magisteria.") If the "principle of limitation," as articulated by McMullin, represents a weak statement of Galileo's position, the "principle of independence" articulated by Pera,

represents a stronger form.

[11] What may we conclude? Galileo's *Letter to the Grand Duchess Christina* contains a variety of assertions about biblical authority, which stand in some tension with one another. But there can be little doubt that in this letter Galileo was attempting to impose limits on the scope of biblical authority. Indeed his preferred view seems to alternate between the weak and the strong positions espoused, respectively, by McMullin and Pera. What I want to argue is that neither position — neither a principle of limitation nor a principle of independence — can plausibly be attributed to Augustine. It is worth noting that McMullin himself seems uneasy with doing so. He does so only with the concession that Galileo holds to a much broader form of that principle than Augustine would have accepted. Augustine holds only that Biblical authority should not be invoked when it comes to "*technical* issues of natural science" (emphasis mine), while Galileo suggests it should not be invoked with regard to *any* kind of natural knowledge (1998: 306). But this is a slippery distinction. At what point, for instance, does a knowledge of nature in general, where Augustine does invoke the authority of Scripture, fade over into "technical issues of natural science," where apparently he would not? In any case, a close examination of *De Genesi ad litteram* suggests that Augustine's position is not accurately described as a "principle of limitation," in any sense of those words. Unlike Galileo, Augustine is not interested in limiting the authority of the biblical writings. He therefore holds to an entirely different principle, with a rather different set of implications. Augustine's hermeneutical principle in the matter of what we would call science and religion is better described as a "principle of differing purpose." It corresponds to only the first of the two points made by Galileo.

[12] It would be easy enough to show that Augustine does rely on Scripture for knowledge about the natural world, knowledge which we might describe as "scientific."<8> But that would only suggest that Augustine does not espouse the *strong* form of the principle of limitation (Pera's "principle of independence"), as McMullin rightly suggests. Augustine does not distinguish natural and revealed knowledge by arguing that they deal with subjects which never overlap. He would have no time for Gould's NOMA principle! However, what we need to ask is whether Augustine holds to even the *weak* form of the principle of limitation, espoused by McMullin, according to which Scripture should not be used to settle "technical issues of natural science." To test this idea, we need to find a passage which deals with something corresponding to a "technical issue of natural science,"

so that we may examine Augustine's attitude to the authority of Scripture in such a case. The only clear example I can find in *De Genesi ad litteram* is in another passage from book two, where Augustine tackles the question of whether the sun, moon and stars are of equal brightness. As he writes,

> certain persons are also wont to ask whether the luminaries of heaven, that is, the sun, moon, and stars, are in themselves equally bright, on the supposition that the unequal distances from earth may cause them to appear with greater or lesser brilliance to our eyes. Those who hold this opinion have no hesitation in saying that the brightness of the moon is less than that of the sun, by which, they say, it is illumined. Concerning the stars, they go so far as to maintain that many are the size of the sun, or even larger than it, but that they appear small because of their greater distance. (*LMG* 2.16.33)

Does this question correspond, in Augustine's eyes, to what McMullin describes as "technical issues of natural science"? It seems from the following paragraph (*LMG* 2.16.34) that it does. Augustine's argument there is that, while such speculation is all very well for unbelievers, it is "neither necessary nor fitting" for believers to waste their valuable time in what he describes as "subtle enquiries" (*subtilius aliquid quaerere*, literally, "to enquire in a rather subtle manner" [Augustine 1972: 204]).<9> If these matters are for Augustine matters of "rather subtle enquiry," then they would seem to correspond to the "technical matters" to which McMullin makes reference.

[13] How, then, does Augustine respond to this question? His initial response might seem to be in accordance with McMullin's principle of limitation, that is to say, the principle that "texts of Scripture should not be taken to have a bearing on technical issues of natural science." In Augustine's words, "for us it would seem sufficient to recognize that, whatever may be the true account of all this, God is the Creator of the heavenly bodies." In other words, the true account may be left to the natural philosopher to decide; all the Christian need do is to acknowledge God as Creator. Yet the words which follow suggest that Augustine's view is not so simple. For he immediately adds: "And yet we must hold to the pronouncement of St Paul, *There is one glory of the sun, and another glory of the moon, and another of the stars; for star differs from star in glory* [1 Cor 15:41]." In other words, whatever position one accepts, Augustine insists it must be compatible with 1 Corinthians. If he truly held to a principle of limitation, he would not have regarded 1 Cor 15:41 as having a bearing on this matter at all.

[14] It follows that McMullin's attribution to Augustine of a "principle of limitation"

cannot explain what our author is doing here. But on my proposed reformulation of Augustine's position — that of the principle of differing purpose — his argument becomes clear. The purpose of 1 Corinthians 15 is not to teach the physical details of the universe, but to speak about human bodies at the resurrection of the dead, a fact which Augustine recognizes in the same passage ("Paul speaks thus because of the likeness of the stars to risen bodies of men"). Compared to the doctrine of the resurrection, such subtle speculations about the structure of the universe are rather a waste of valuable time (cf. *LMG* 2.16.34). Yet — and this is the key point — when, in fulfilling this more serious purpose, the Scriptures make reference to aspects of the physical world, what they say must be taken with the utmost seriousness.<10> *Pace* McMullin, such biblical texts *do* "have a bearing on technical issues of natural science," even if they were not written for that purpose. As it turns out, Augustine suggests that 1 Cor 15:41 *could* be interpreted in such a way that it does not preclude the scientific opinion he is discussing. One could, for instance, argue that, while the heavenly bodies are all of the same brightness *in themselves*, St Paul's remark refers to their differing degrees of brightness *when seen by us*. But at the end of the day, Augustine suggests that believers should accept the plain meaning of Gen 1:16, even in this rather technical matter.<11> As he writes, "we do better when we believe that those two luminaries [the sun and the moon] are greater than the others, since Holy Scripture says of them, *And God made the two great lights*" (*LMG* 2.16.34).

[15] While I am distancing myself from Ernan McMullin's attribution to Augustine of a "principle of limitation," my conclusion is very close to one he himself arrived at in an earlier study. In that study McMullin (1981: 21) speaks of the tension between two ideas, both found in Augustine's work. The first is that idea that Scripture is not intended to teach matters that are "of no relevance to salvation." The second is Augustine's assertion (found elsewhere in the same commentary) that where the conclusions of reason are not securely founded, the literal sense of Scripture is to be preferred. The question this raises is clear: "If cosmology is not relevant to salvation, why should it be supposed that cosmological details in the Scriptures are to be taken as literal truth-claims?" McMullin's response to this question seems to me to be entirely correct:

> Augustine's answer would undoubtedly be that they are covered by the warrant that the literal sense of Scripture possesses, and that one cannot require relevance to the salvation message of every passage for which this is to hold. The details of Israel's history with which the Old Testament abounds lack such relevance, yet they must (he would insist) be taken as historically accurate.[1981: 21]

If this is correct, as I believe it is, then it is misleading to suggest that Augustine holds to a "principle of limitation," as though he were intending to place limits on Biblical authority. Such a concern belongs to a later age; it is foreign to the religious world of Augustine. As far as Galileo is concerned, he was surely correct to cite Augustine in support of his first point: that the purpose for which Scripture was written was not that of teaching astronomy. However, in taking this argument further and suggesting that biblical authority should not be invoked in astronomical matters, Galileo was departing from the tradition which Augustine represents.

## Vatican II on Science and Scripture

[16] Finally, it may be interesting to compare the positions of Augustine and Galileo with that held by the Catholic Church today. Does the Catholic Church now endorse Galileo's "principle of limitation"? Or does its position go no further than Augustine's "principle of differing purpose"? In the writings of some of the recent Popes, including (as we will see shortly) an important statement from Pope John Paul II, this distinction is sometimes blurred. However, if we turn to the second Vatican Council, we find that the distinction is crystal clear. The key passage here is from the Council's 1965 *Dogmatic Constitution on Divine Revelation*, commonly known as *Dei Verbum*, which deals with the inspiration and the authority of the Bible. The first part of paragraph eleven of this document deals in relatively traditional terms with the doctrine of inspiration, although it does take care to emphasise that the authors of the Scriptures were "true authors" who under divine inspiration made use of their own "powers and abilities." The second part of the paragraph is the key text for our discussion. The wording is as follows:

> Since therefore all that the inspired authors or sacred writers assert ought to be held to be asserted by the Holy Spirit, it follows that the books of Scripture are to be declared to teach firmly, faithfully and without error the truth which God wished to be consigned to the Sacred Letters for the sake of our salvation.<12>

[17] The history of this much-debated text highlights the care with which it is worded. As the Constitution went through its various drafts in the autumn of 1964, the Council Fathers grappled with the difficult question of biblical inerrancy. The form of the text produced for discussion at this time stated that the Scriptures "are to be acknowledged as teaching firmly and faithfully, in its fulness and without error the truth of salvation" (*veritatem salutarem inconcusse et fideliter, integre et sine errore docere*

*profitendi sunt*; Grillmeier 1969: 210). But when this reached the Council for debate, a number of the Fathers expressed concerns about the phrase "truth of salvation" (*veritas salutaris*). This expression seemed to them to limit the inerrancy of Scripture to matters of "faith and morals" (ibid.: 211) a position which they saw as contrary to Catholic tradition. In response to these concerns, the Theological Commission (which advised the Council Fathers and whose members had been involved in the preparation of the draft) suggested that the key phrase "truth of salvation" (*veritas salutaris*) should be retained, arguing that it did not necessarily limit the scope of either inspiration or inerrancy (ibid.:212). However, the more conservative Council Fathers were not satisfied with this opinion and their concerns lead to the intervention of Pope Paul VI. On 17 October 1965 the Pope sent a letter to Cardinal Ottaviani, himself a deeply conservative figure who was head of the Theological Commission. The letter suggested that the Commission consider afresh the wisdom of this phrase, since it was at least susceptible of a false interpretation (ibid.: 213). After an intense debate, the Commission (and later the Council) accepted the present formulation, which was originally offered by a group of seventy-three Council Fathers as a way out of the difficulty (ibid.: 213–214).

[18] It is tempting to pause for a moment to examine the politics of this historic debate. It is interesting to note, for instance, that the Commission subtly but significantly altered the wording of the formulation presented by the seventy-three Fathers (ibid.: 214–215) Their proposed formula had read *veritatem, quam Deus, nostrae salutis causa, libris sacris consignare voluit*, where the phrase "cause of our salvation" could be read in apposition to "God." The clause would then have to be translated as "the truth which God, the cause of our salvation, wished to consign to the sacred books." The Commission not only altered the active infinitive (*consignare*: "to consign") to a passive (*consignari*: "to be consigned"), to emphasise once again the fact of the human authorship of the Bible. It also removed the commas, so that the word *causa* would naturally be read in the ablative rather than in the nominative case, as an adverbial qualification of *consignari*. In the final text, the phrase *nostrae salutis causā* clearly indicates not the role of God as saviour, but the purpose for which these matters were being consigned to writing.

[19] In this context, however, we need note only this last point. As a commentator on the Council writes, the abandonment of the phrase "truth of salvation" (*veritas salutaris*) was intended to avoid the idea that Scripture is "materially divided into inspired (and inerrant) parts on the one hand, and non-inspired parts (and thus from

the start liable to error) on the other" (ibid.: 231). The new wording suggests not a material distinction but a formal one (ibid.: 234), to use the language of scholastic philosophy. It suggests the particular purpose for which the *whole* of Scripture was inspired. The new formula makes it clear that not only matters of faith and morals, but other matters too — matters of history or of natural science — could be said to fall under the inerrancy of Scripture, if they can be shown to relate "to our salvation."

[20] Vatican II had in common with Galileo's treatise the desire not to hinder scientific (and historical) research by unnecessary appeals to the authority of the Bible. Yet it would be misleading to describe the teaching of *Dei Verbum* as a "principle of limitation," in the sense in which this is defined by McMullin. For Vatican II, there is no reason why texts of Scripture might not have a bearing on "technical issues of natural science" (McMullin 1998: 298), if those matters could be shown to relate to the salvation of human beings. Vatican II's position is closer to that of Augustine: the principle articulated in *Dei Verbum* is a "principle of differing purpose." The purpose of Scripture is not to teach scientific matters; it is to bring human beings to salvation. But historical and scientific matters, even quite technical issues, would fall under the inerrancy of Scripture, *if* they could be shown to relate to salvation. Where Vatican II's position seems to differ from that of Augustine is in its implicit acknowledgement that where the matters spoken of in Scripture do *not* relate to our salvation, they may not enjoy the guarantee of inerrancy.<13> If such an acknowledgement *is* implied in the wording of *Dei Verbum* — if it is present, it is only by implication, presumably because of the break with traditional attitudes such an acknowledgement would entail <14> — then it seems to be going further than Augustine would want to go.

## Could There Be Another Galileo Case?

[21] In 1979 Pope John Paul II requested that the Pontifical Academy of Sciences re-examine the records of the trial and conviction of Galileo in 1633. When a Commission appointed for this purpose reported back to the Pope on 31 October 1992, the Pope welcomed their address with a speech which touched on the issues raised. At first sight, this address might seem to lend support to a strong version of the principle of limitation (even, perhaps, a version of the principle of independence described by Marcello Pera and endorsed by Stephen Jay Gould). In paragraph twelve of his address, for instance, the Pope states that "the Bible does not concern

itself with the details of the physical world, the understanding of which is the competence of human experience and reasoning." At first sight, this wording seems to echo the principle of limitation put forward by Ernan McMullin. In the same paragraph the Pope says that "there exist two realms of knowledge, one which has its source in Revelation and one which reason can discover by its own power." In itself, this is a profoundly traditional and theologically uncontroversial statement. But in this context the phrase "two realms of knowledge" could be read to lend support to something akin to Pera's "principle of independence" or to Gould's idea of "non-overlapping magisteria." The Pope even cites Cardinal Baronio's famous *bon mot*, that "the intention of the Holy Spirit is to teach us how one goes to heaven and not how heaven goes" (cited by Galileo: *GA*, 96) and says of science and religion that "the methodologies proper to each make it possible to bring out different aspects of reality." At first sight the unwary reader might believe that these remarks rule out the possibility of another Galileo case. Scientific and religious claims, it seems, could not again come into apparent conflict, since they deal with non-overlapping realities.

[22] Yet there is another remark in the same context which should give us pause for thought. The Pope also says that "these two realms [of knowledge] are not altogether foreign to one another; they have points of contact." This, too, is a profoundly traditional position, but — despite the Pope's endorsement of Galileo's hermeneutical principles — it suggests something rather different from what Galileo was hoping to achieve. This is particularly clear if the Pope's words are interpreted in the light of the teaching of Vatican II, as one assumes he intends them to be. (The Pope refers to *Dei Verbum* in the same address.) In this context Cardinal Baronio's remark can be interpreted to mean no more than that Scripture and science have different purposes, a point made by Augustine in the fifth century and by Vatican II in the twentieth. It does not exclude the possibility that, in pursuing these differing goals, the two fields of knowledge may overlap. Indeed the Pope's address implicitly acknowledges this fact when it speaks of the problem faced by the Church at the time of the Galileo affair. That problem, the Pope writes, was that of "knowing how to judge a new scientific datum when it seems to contradict the truths of faith." In the end, of course, the Pope believes that such contradiction can be only *apparent*, but this is not because religion and science represent "non-overlapping magisteria." On the contrary, if there were no overlap in what religion and science teach, there would be no possibility of even the apparent conflict of which he speaks. It follows that — in the Pope's own words — "it is therefore not to be excluded that one day we shall find ourselves in a similar situation" to that which prevailed in Galileo's day. It seems that

Stephen Jay Gould is too quick to conclude that the Catholic Church embraces his NOMA principle (Gould 1999: 70–82). Despite some apparent indications to the contrary, and despite the fact that its impact on the sciences today would be relatively insignificant, the possibility of another Galileo case cannot be excluded.

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## Notes

**1.** Perhaps I should say "notoriously described," since in recent years White's "warfare thesis" has been severely criticized, on historical grounds (Lindberg and Numbers 1986: 3–4; Carroll 1999).

**2.** The question "Could there be another Galileo case?" is taken from Richard Blackwell's essay of the same name (1998), where it receives a similarly affirmative answer, although for rather different reasons.

**3.** For a first-hand account of this meeting, see Castelli's letter to Galileo, dated 14 December 1613. The text is reproduced, in full, in Finocchiaro (1989: 47–48, henceforth cited as *GA*) and is also found, in part, in Blackwell (1991: 64–65). Citations from the Italian text are taken from Galileo 1615.

**4.** Augustine, *Retractions* 2.24.1 in 1982 (henceforth cited as *LMG*) 2:323.

**5.** This may represent a weakening of the statement found in the *Letter to Castelli*, where Galileo expresses the conviction that "the authority of the Holy Writ has merely [*solamente*] the aim of persuading men of those articles and propositions which are necessary for their salvation and surpass all human reason, and so could not become credible through some other science or any other means except through the mouth of the Holy Spirit itself" (*GA*, 51). (For contrasting discussions of this apparent change, see McMullin 1998: 343 n.136; Pera 1998: 376.)

**6.** It is this restriction which Cardinal Bellarmine effectively rejects in his 1615 letter responding to the defence of Copernican theory by the Carmelite priest Paolo Antonio Foscarini. Bellarmine argues that while the stability of the earth may not be "a matter of faith because of the subject-matter [*ex parte objecti*], it is still a matter of faith because of the speaker [*ex parte dicentis*] (Blackwell 1991: 266). Blackwell (1991: 32, 105) refers to this as the *de dicto* doctrine of biblical authority: something is

covered by biblical authority simply by virtue of being said by the inspired authors.

**7.** At one point in the letter Galileo offers a hint of a way in which the apparent contradiction might be resolved. In one of the passages in which he adopts what McMullin calls the "principle of the priority of Scripture" — the idea that the authority of the Bible should sometimes take preference over matters which are not firmly demonstrated — Galileo makes it clear that what he has in mind are fields of enquiry "where human reason cannot reach, and where consequently one cannot have a science, but only opinion and faith (*dove gli umani discorsi non possono arrivare, e che di esse per consequenza non si può avere scienza, ma solamente opinione e fede*; *GA*, 104). It is, it seems, only with regard to matters which lie *beyond* human reason that one should prefer the authority of the Bible. The "principle of the priority of Scripture" is here reinterpreted in the light of a strong version of the "principle of limitation," one which comes close to Pera's "principle of independence." (See also McMullin 1998: 309–310.)

**8.** See, for instance, his treatment of "the waters above the heavens" mentioned in Genesis 1 (*LMG* 2.5.9; cf. McMullin 1998: 298). In a recent monograph (Dawes 2001: 16) I accepted McMullin's use of the phrase "principle of limitation" in reference to Augustine's work. What I here want to argue is that, while such language is certainly applicable to Galileo, it is not strictly applicable to Augustine.

**9.** In this context the comparative adverb *subtilius* seems to have effectively lost its comparative sense.

**10.** Augustine's position here is actually very close to the *de dicto* view of biblical authority held by Cardinal Bellarmine at the time of Galileo's trial (Blackwell 1991: 32, 105; see note 5 above).

**11.** In other words, Augustine's final appeal here is to what McMullin (1998: 295) calls "the principle of the priority of Scripture," according to which the literal meaning of the Scripture should prevail over natural knowledge, provided that the latter is not demonstrably proven.

**12.** *Cum ergo omne id, quod auctores inspirati seu hagiographi asserunt, retineri debeat assertum a Spiritu Sancto, inde Scripturae libri veritatem, quam Deus nostrae salutis causā Litteris Sacris consignari voluit, firmiter, fideliter et sine errore docere profitendi sunt.*

**13.** While it was clearly the intention of some Council Fathers to acknowledge the possibility of error in matters not relating to salvation (Grillmeier 1969: 205–209), Vatican II nowhere *explicitly* abandons the *de dicto* principle of biblical authority articulated by Cardinal Bellarmine at the time of the Galileo affair.

**14.** For statements of a position on biblical inerrancy which comes very close to that articulated by Cardinal Bellarmine — found, it should be noted, in papal encyclicals that are generally supportive of modern biblical criticism — see Pope Leo XIII, *Providentissimus Deus* (1893) and Pope Pius XII, *Divino Afflante Spiritu* para. 1 (Megivern 1978: paras 337–338, 718)