Galileo and Spinoza: Heroes, Heretics, and Hermeneutics

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Introduction

My purpose in this paper is to explore what happens when a scientific methodology rooted in mathematical geometry is then applied to biblical hermeneutics. Galileo and Spinoza are both thinkers who, in their adoption of the methods of philosophy and science, challenged the limits of their social, intellectual, and theological margins. Both thinkers were regarded by their peers as threats to the institutional life of their respective communities; both espoused doctrines that were regarded as heretical by their governing bodies. What I shall try to demonstrate is that Galileo and Spinoza share a methodological program of natural science which, rooted in a mathematical view of nature, is then applied to Scripture. It is this methodological preoccupation that dooms them both and ultimately subjects them to the charge of heresy.

In this paper I shall examine the circumstances, both personal and ideological, surrounding the excommunications of both Galileo and Spinoza. The implications of the ideological impetus for the excommunications I situate in the process of "secularization of theology," a term used by Funkenstein to describe the scientific turn in the seventeenth century.[1] I want to compare the hermeneutic methods which were developed in two controversial works, Galileo's *Letter to the Grand Duchess Christina*, completed in 1615, and Spinoza's *Theological-Political Treatise*, published anonymously in 1670, but possibly commenced

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[1] Amos Funkenstein, *Theology and the Scientific Imagination from the Middle Ages to the Seventeenth Century* (Princeton, 1986).

much earlier, and then to explore the application of these hermeneutic methods to the proof-text adduced by both writers, namely, Joshua 10:12-13.

Galileo and Spinoza: The Scientific Quest

By suggesting that Galileo and Spinoza represent the tensions inherent between religion and science, I am not simply acquiescing to the adversarial model of the science-religion wars as they have been portrayed by late nineteenth-century historians of science. These scholars would have us believe that science has been persecuted by religion: more specifically, that western science has been persecuted by the Catholic Church. For example, in his enormously influential work *History of the Conflict between Religion and Science*, John William Draper argued that the Church "became a stumbling block in the intellectual advancement of Europe for more than a thousand years."[2] On this antagonistic model, the history of scientific development was presented as a war against a narrow-minded establishment that feared science; the conflicts between science and religion were seen as a one-sided affair in which the Church sought to suppress truth-seeking scientists. Jewish institutions were not castigated nearly as maliciously on this view (perhaps, the cynic may argue, because by this point in history Jews wielded so little power).

But as Brooke, Funkenstein, Feldhay, and others have reminded us, the Draper-White model of conflict between science and religion is overly simplistic. It is important to recognize that, especially in the early modern period, religion, philosophy, and science were mutually influential upon one another. Of course the term "science" is itself anachronistic when used in the early modern period. Were it not for the ubiquity of references to the "science-religion" wars, the term "natural philosophy" would be more appropriate. Funkenstein and Brooke have, for example, articulated many examples in which theological concepts influenced scientific and philosophical modes of discourse in the seventeenth century.[3]

It must be recognized too, that many of the struggles which occur between religion and science are not merely ideological wars but have a human dimension as well; ultimately, it is people who interact, not theories—personalities loom large and can affect the outcome of a debate. That this is certainly the case with both Spinoza and Galileo should come as no surprise. Rivka Feldhay, for example, argues that most accounts of Galileo are based on "overriding binary

[2] See J. W. Draper, *History of the Conflict between Religion and Science* (New York, 1874), and A. D. White, *A History of the Warfare of Science and Theology in Christendom* (New York, 1876); also John H. Brooke, *Science and Religion: Some Historical Perspectives* (Cambridge, 1991).

[3] See Brooke, *Science and Religion*, and Funkenstein, *Theology*.

opposition: that of the Church versus science,"[4] an opposition which she claims is myopic and narrow. Scientific truths are not simply waiting to be discovered; they are embedded in social constructs. While I agree with Feldhay that social construction plays an important role, nevertheless I believe that intellectual content plays an equally important role in unpacking the dynamics of the controversy. This is certainly the case with both Spinoza and Galileo.

Both Galileo and Spinoza, concerned as they were to free philosophy and science from the shackles of theology, held controversial views that threatened the ideological fabric of their respective religious institutions. It is important to note that although Spinoza's views were not actually published before his excommunication, Galileo was not shy about publicizing his position, as apparent in his *Letter to the Grand Duchess Christina*. But in both cases their perceived views were regarded with suspicion: for Galileo, it is the Church in Rome which objects to the ideology reflected in the *Letter*, whereas in the case of Spinoza it is the Rabbinical court in Amsterdam which objects to the perceived "objectionable views and heresies" reflected in Spinoza's conduct. Although the two men never met, and to my knowledge Spinoza never quotes Galileo by name, Spinoza surely knew of Galileo's works in mathematics and optics, as evidenced in his letters.[5] Spinoza contained as well in his library a work by the Renaissance Jewish philosopher and astronomer Joseph Delmedigo, a former student of Galileo's. This work, entitled *Sefer Elim*, contains long sections devoted to Galileo's astronomical discoveries.

As a result of their controversial works, both Galileo and Spinoza were threatened with excommunication. Galileo was accused of heresy in 1633, recanted, was reinstated into the Church, and was assured Catholic burial and immortality. Spinoza was accused of heresy in 1656, refused to recant, was excommunicated from the Jewish community, changed his name from Baruch to Benedict, and lived the remainder of his short life on the margins of the Jewish world. I say on the margins, as opposed to outside because he never fully rid himself of his Jewish identity either in his own mind or in the mind of those who still regard him as "the Jew of Voorburg."

The Art of Excommunication

It is important to note for subsequent discussion that Galileo's earliest discoveries with the telescope in 1609 do not prove heliocentrism to be true; they merely add plausibility to the Copernican hypothesis. Galileo's *Sidereal Messenger* of 1610 helped to undermine Aristotelian cosmology in that it disproved

[4] Rivkah Feldhay, *Galileo and the Church: Political Inquisition or Critical Dialogue* (Cambridge, 1995), 5.

[5] See, for example, A. Wolf, *The Correspondence of Spinoza* (London, 1966), 198 (Letter 26).

the perfection of the heavens. Galileo demonstrated, for example, that the surface of the moon was rough and contained mountains and valleys and that Jupiter had a set of moons orbiting it. Galileo's discovery that Venus had phases helped to undercut some of the details of a geocentric model, but this fact did not prove demonstratively that the sun was at the center of the universe. It should also be noted that whereas among his opponents in Florence Galileo's findings were viewed with misgiving and even scorn, among the Jesuits in Rome he was received as a hero. In part the Jesuit reception was due to the reactions within the Church to the Council at Trent which was convened in December 1545 under Pope Paul III to deal with much needed reforms in the Catholic Church. The Fourth Session, held on 8 April 1546, dealt with interpretation of Scripture. Part of this decree has great implications for what has come to be known as the Galileo affair and reads as follows:

> Furthermore, to control petulant spirits, the Council decrees that, in matters of faith and morals pertaining to the edification of Christian doctrine, no one, relying on his own judgment and distorting the Sacred Scriptures according to his own conceptions, shall dare to interpret them contrary to that sense which Holy Mother Church to whom it belongs to judge of their true sense and meaning, has held and does hold, or even contrary to the unanimous agreement of the Fathers, even though such interpretations should never at any time be published.[6]

In contradistinction to standard readings of the Galileo affair according to which Galileo challenged the "old world order" (the issue being therefore one of cosmology), McMullin has recently argued that what's at stake is the ultimate authority of Scripture. By upholding Copernican heliocentrism, Galileo is challenging the inerrancy of Scripture. On this interpretation the dispute has to do not so much with cosmology *per se* as with the issue of authority: with whom does authority lie in the interpretation of disputed passages in Scripture.[7]

In fact there are two different Galileo affairs: the first occurred in February 1616 and the second in the spring of 1633. In the first, the defendant was a scientific idea, namely, the Copernican hypothesis, and did not concern Galileo personally. In the second trial Galileo himself was the defendant, the charge being that his most recent book *Dialogue Concerning the Two Chief World Systems* had violated the conditions of the injunction of 1616 against teaching Copernicanism. In his *Letters on the Sunspots* (1613) Galileo first publicly supported Copernican theory. In the same year he wrote a lengthy letter to his friend

[6] See Richard J. Blackwell, *Galileo, Bellarmine, and the Bible* (Notre Dame, 1991), Appendix I.

[7] Ernan McMullin, "Galileo on Science and Scripture," *The Cambridge Companion to Galileo*, ed. Peter Machamer (Cambridge, 1998), 273.

Benedetto Castelli about reconciling apparent conflicts between Scripture and science. He argued that the Scriptures were written in a common language for the multitude and ought not be taken literally when scriptural texts conflicted with science. This letter was a precursor to his more famous *Letter to the Grand Duchess Christina*. In late 1614 Tommaso Caccini, a young Dominican priest, drove Galileo from the pulpit, insisting that Galileo explain the Joshua passage. As a result of this attack another Dominican, Niccolò Lorini, submitted a copy of Galileo's letter to Castelli to the Inquisition in Rome for review in 1615. Although the letter was found consistent with Catholic doctrine, his friend Barberini (who would later become pope) warned Galileo to limit his discussion of Copernicanism to "hypothetical mathematical discussion" of the universe, so as to avoid any theological repercussions. In 1616 a public decree was issued by the Congregation of the Index (a committee in charge of book censorship) as a result of a special commission to investigate Copernicus's ideas; this decree prohibited the publication of books that asserted the truth of Copernicanism, claiming that Copernicanism was scientifically unsound and theologically heretical.

The point here is the importance of biblical interpretation to what is often referred to as the science-religion debate. In the case of Galileo the Church was concerned much less with the details of Copernicus's science and much more with the threat posed by Galileo's presuming to take upon himself the task of reconciling scriptural passages with the new science. The very idea that an individual outside theological circles, an individual without the proper theological training, could presume to embark upon the kind of critical interpretation usually reserved for the Church fathers, threatened the underpinnings of Church authority.[8]

As for Spinoza's excommunication or *herem* let me simply point out that just as Galileo's interpretive hubris so annoyed the Catholic Church, so too did Spinoza's taking upon himself a complete reconceptualization of Scripture infuriate the Jewish communal leaders in Amsterdam, leading to his *herem*.[9] It is also important to recognize the unusual nature of the Amsterdam Jewish community which, consisting primarily of former *conversos*, was actually closer to Catholic sentiment than many other historical Jewish communities.[10]

The Sephardim of Amsterdam were not shy about using the *herem*. Disregarding Maimonides' admonition to wield this most extreme form of punishment only sparingly, the leaders of the congregation employed it widely for maintaining discipline. It was into this community that Spinoza was born, and it was this community that judged his actions and thoughts. On 27 July 1656 Spinoza's

[8] Feldhay discusses these tensions in *Galileo and the Church*.

[9] Steven Nadler, *Spinoza: A Life* (Cambridge, 1999).

[10] See Yirmiyahu Yovel, *Spinoza and Other Heretics: The Marrano of Reason* (Princeton, 1989).

herem was announced from the synagogue of the Portuguese Jews in Amsterdam. The "Lords of the Ma'amad," the governing body of six parnassim and the gabbai, proclaimed that:

> having long known of the evil opinions and acts of Baruch de Spinoza, they have endeavored by various means and promises, to turn him from his evil ways. But having failed to make him mend his wicked ways, and, on the contrary, daily receiving more and more serious information about the abominable heresies which he practiced and taught and about his monstrous deeds, and having for this numerous trustworthy witnesses who have deposed and born witness to this effect in the presence of the said Espinoza, they became convinced of the truth of this matter; and ... they have decided, with their consent, that the said Espinoza should be excommunicated and expelled from the people of Israel.[11]

Compare this statement with the charges leveled against Galileo. The actual sentence read to Galileo Wednesday, 22 June 1633 in Rome reads as follows:

> We say, pronounce, sentence, and declare that you, the said Galileo, by reason of the matters adduced in trial, and by you confessed as above, have rendered yourself in the judgment of this Holy Office vehemently suspected of heresy, namely, of having believed and held the doctrine—which is false and contrary to the sacred and divine Scriptures—that the Sun is the center of the world and does not move from east to west and that the Earth moves and is not the center of the world, and that an opinion may be held and defended as probable after it has been declared and defined to be contrary to the Holy Scripture;[12]

The most striking difference between the two statements is that the very content of Galileo's heretical position is stated clearly by his accusers, whereas in the case of Spinoza the abominable heresies are alluded to but not articulated. All we know from Spinoza's *herem* is that Spinoza was presumably guilty of "opinions and acts," "heresies which he practiced and taught," and "monstrous deeds," all of which the governing body regarded as tantamount to heresy. Although we can infer from later writings what might have infuriated the Jewish leaders, we have no actual written statement from Spinoza stemming from this period of his life.[13] Galileo admitted to his heresies and abjured, whereas we have no record of

[11] Asa Kasher and Shlomo Biderman, "Why Was Baruch de Spinoza Excommunicated," *Sceptics, Millenarians and Jews*, ed. David S. Katz and Jonathan I. Israel (Leiden, 1990), 98-99.

[12] See Giorgio de Santillana, *The Crime of Galileo* (Melbourne, 1958), 306ff.

[13] See Nadler, *Spinoza: A Life*.

Spinoza's reaction to his *herem*. Moreover, Galileo promises never to write anything more that would offend the Church, whereas Spinoza's philosophical career, commencing with his repudiation of Jewish religion and authority, blossoms after the *herem* has been formally pronounced.

Let us turn then to the more substantive issue, namely what is so threatening about these figures that they arouse such ire in their respective communities even to the point of excommunication. What unites our two heretics, I believe, is their insistence upon what Funkenstein has called the secularization of theology. This insistence is characterized by their respective applications of a paradigm of mathematical certitude to nature as a whole, as well as to theology: this mathematical paradigm forms the basis for their respective models of demonstrative science. The theological implications of this appropriation, what Funkenstein calls the secularization of theology, are reflected in their respective biblical hermeneutics, a method that is construed as anti-thetical to the inerrancy of Scripture. For Galileo this method is stated explicitly in his *Letter*. For Spinoza the case is a bit more difficult to establish: although Spinoza had not yet formulated this method in a published form, nevertheless there is reason to believe that he was already very much involved with thinking about (and possibly promulgating orally) such matters even before his *herem*.[14]

The Secularization of Theology

In the case of Galileo I take my claim to be fairly uncontroversial. Galileo's conception of demonstrative science was very much influenced by Aristotle's paradigm of scientific knowledge. In the *Posterior Analytics* Aristotle specifies the kind of "showing" that would qualify as "science," or knowledge in the fullest sense of *episteme*. He weaves together the three meanings of "showing" (*apodeixis*), which includes proving, explaining, and teaching, into an account of demonstration. According to Aristotle, in order for knowledge to qualify as fully scientific, it must satisfy all three goals.[15] It is against the backdrop of the *Posterior Analytics* that Galileo worked, following the accepted seventeenth distinction between *demonstratio propter quid* (*apodeixis tou dioti*) and *demonstratio quia* (*apodeixis tou hoti*).[16] The former was true scientific demon-

[14] See Richard H. Popkin, "Some New Light on the Roots of Spinoza's Science of Bible Study," *Spinoza and the Sciences*, ed. Marjorie Grene and Nancy Maull (Dordrecht, 1986), 171-90; Richard H. Popkin, *Isaac La Peyrère (1596-1676): His Life, Work and Influence* (Leiden, 1987); and Richard H. Popkin, "Spinoza and Bible Scholarship," *The Cambridge Companion to Spinoza*, ed. Don Garrett (Cambridge, 1996), 383-407.

[15] Ernan McMullin, "The Conception of Science in Galileo's Work," *New Perspectives on Galileo*, ed. Robert E. Butts and Joseph C. Pitt (Dordrecht, 1978), 213.

[16] See Peter Dear, "Method and the Study of Nature," *The Cambridge History of Seventeenth-Century Philosophy*, ed. Daniel Garber and Michael Ayers (Cambridge, 1998), 147-77, and William Wallace, *Prelude to Galileo: Essays on Medieval and Sixteenth Century Sources of Galileo's Thought* (Dordrecht, 1981).

stration—deductive syllogistic demonstration of an effect from an immediate cause. The latter was a move back from effects back to causes. In his methodology of science, then, Galileo was a thoroughgoing Aristotelian.[17] What I mean by this is that for a scientific thesis to be accepted, it must be either an evident first principle or else demonstrable from these principles.

The case for the primacy of scientific method is more difficult to establish for Spinoza. Recent discussion has centered on the extent to which Spinoza was interested in the new science. Nancy Maul suggests that Spinoza was estranged philosophically from experimental science: "[Spinoza's] philosophy was strikingly disconnected from the shifting and interrogating science that went on around him...he was as remote from elementary 'doing' of science and especially from the idea of learning by experience as Plato was."[18] Others, however, have argued that Spinoza was indeed "taking part in the so-called rise of modern science."[19] Even a cursory look at his correspondence confirms his interest in the new science. While it is true that Spinoza did not do original research in the physical or mathematical sciences, he did have a sound knowledge of optics and the current physics of light. A similar interest can be traced to Spinoza's interest in astronomy and optics, as attested by many references in his letters.[20]

It is important to note in this context the important influence of Delmedigo (1591-1655) upon Spinoza. Delmedigo visited Amsterdam in 1626 and was befriended by Manasseh ben Israel, who published, among other works, Delmedigo's *Sefer Elim*, which discusses at great length Galileo's scientific theories. In this work Delmedigo mentions Galileo as his "Rabbi" and notes that Galileo allowed him to make observations with his "famous telescope."[21] Galileo introduced Delmedigo to the Copernican system, which Delmedigo praises, although he is careful not to abandon Ptolemy.[22] He says that Copernicus's proofs are convincing, and "anyone who will not accept them can only be classed as a perfect imbecile."[23] Spinoza had a copy of Delmedigo's work in his library and this

[17] See Rivka Feldhay, "The Use and Abuse of Mathematical Entities: Galileo and the Jesuits Revisited," *The Cambridge Companion to Galileo*, ed. Peter Machamer (Cambridge, 1998), 121.

[18] Nancy Maull, "Spinoza in the Century of Science," in *Spinoza and the Sciences*, ed. Marjorie Grene and Debra Nails (Dordrecht, 1986), 3.

[19] See Edwin Curley, "Notes on a Neglected Masterpiece: Spinoza and the Science of Hermeneutics," *Spinoza: The Enduring Questions*, ed. Graeme Hunter (Toronto, 1994), 65-99; Heine Siebrand, "Spinoza and the Rise of Modern Science in the Netherlands," *Spinoza and the Sciences*, ed. Marjorie Grene and Nancy Maull (Dordrecht, 1986), 62; also Nadler, *Spinoza*, 183.

[20] See Wolf (ed.), *The Correspondence of Spinoza*; *Letter 32 to Oldenberg*, 213; *Letter 40*, 231-32; *Letter 46*, 261-62; *Letter 26*.

[21] See Joseph Solomon Delmedigo, *Sefer Elim* (1864), 301, 417.

[22] Delmedigo, *Sefer Elim*, 300, 304, 315.

[23] Delmedigo, *Sefer Elim*, 304; see André Neher, *Jewish Thought and the Scientific Revolution of the Sixteenth Century* (Oxford, 1986).

could very well have been one of his first encounters with the natural sciences of the Renaissance. Through *Sefer Elim* Spinoza could have become acquainted with the cosmology of Copernicus and Galileo.[24]

But perhaps the most important point is Spinoza's shared interest with Galileo in the mathematization of nature as a whole. Galileo reflected a new ideal according to which the ultimate aim of science was a *mathesis universalis*—an unequivocal, universal, coherent yet artificial language to capture our clear and distinct ideas.[25] The demand to see nature as "written in mathematical letters" coincides with this aim. Even more, nature itself was expected to reveal mathematical order and harmony. For Galileo as for Spinoza, geometry itself is taken to be paradigmatic of mathematical certainty. Machamer describes the geometry of Galileo as a comparative, relativized geometry of ratios, not the pure geometry of Euclid, but "the physical geometry of the mixed sciences ... the geometry of Archimedes."[26] It is this mathematical picture of nature that Spinoza shares with Galileo. In the case of conflict both Spinoza and Galileo prefer the guidance of mathematical reason above the suggestions of experience. According to Spinoza, for example, mathematics "which is concerned not with ends but only with the essence and properties of figures, had not shown men another standard of truth."[27] By eliminating the quest for final causes, mathematics reintroduced a model of proper order against which other objects can be studied. For example, in his preface to *Ethics* III Spinoza says that he will "consider human actions and appetites just as if I were considering lines, planes, or bodies."[28] Here the proper method of study of human action, including human emotions, is geometry—not, for sure, the Archimedean geometry of Galileo, but a Euclidean geometry nonetheless.

But what do we do in situations that appear to be impervious not only to the mathematical certitude exemplified by geometry but also to the entire domain of natural science? In particular how do we approach the truths of theology, which utilize their own measure of certitude independent of scientific method? According to Galileo and Spinoza both, herein lies the source of the conflict between science and theology. In his *Discourses* Galileo freely uses the language of demonstration and rigorous proof, but he recognized that the demonstrative ideals of science are inadequate when applied to theological matters. Spinoza, too, recognized the difficulties inherent in understanding theological statements and dogmas. The certainty reflected in prophecy itself is based on the imaginative and

[24] See Ze'ev Levy, *Baruch or Benedict: On Some Jewish Aspects of Spinoza's Philosophy* (New York, 1989), 27.

[25] See Funkenstein, *Theology and the Scientific Imagination*, 28.

[26] Peter Machamer, "Galileo's Machines, His Mathematics, and His Experiments," *The Cambridge Companion to Galileo*, ed. Peter Machamer (Cambridge, 1998), 67.

[27] *Ethics*, in *The Collected Works of Spinoza*, tr. Edwin Curley (Princeton, 1985), 441.

[28] *Ethics*, 492.

not the rational faculty, he argues, and so does not carry the sort of certainty reflected by metaphysics and ontology "the certainty afforded by prophecy was not a mathematical certainty, but only a moral certainty."[29] And so it is the method of science, that is, a method that aspires toward the certitude represented by mathematical geometry, which is pitted against the constraints of biblical interpretation and which gives rise to the antagonism of Spinoza and Galileo's respective audiences. The techniques used by both Galileo and Spinoza to analyze Scripture are a direct result of the challenges of the new science.

On the Science/Religion debate

Both Galileo and Spinoza force the issue of biblical hermeneutics against the backdrop of a theory of demonstrative certainty attained by the new science. For Galileo the question is whether words and sentences in Scripture mean literally what they say, and thus describe actual events and physical truths. The Scriptures often talk, for example, of the earth as being at rest and in the center of the world and of the sun as being in motion and away from the center. Is the literal meaning of such passages the simple, proper, and natural sense of the words, or is it figurative and to be taken in some non-simple sense? More specifically, does Copernicanism as formulated and supported in 1616 require a change from the traditional simple sense of these passages, which is how they were universally understood by the ancient Fathers of the Church, to a new figurative sense as the true literal meaning intended by the Holy Spirit?[30] Galileo's argument is that because God's presence in the world belies a separation between religion and science, in theory it should always be possible to reconcile the two.

For the Jew, however, the question becomes even more complex: namely, how to accommodate Judaism to a secular cosmology that itself has been infiltrated first by Greek and then by Christian influences. Is it the case that the very scientific world view—which the Christian sees as "godless" and void of religious content—is for the Jew already tinged (and contaminated, as it were) with classical "Christian" elements? And if so, does not the enterprise of accommodation become even more complex for the Jew than for the Christian? The real issue in Jewish thought is at what point does the introduction of secular knowledge dilute the basic teachings found in Jewish sources.

It is for this reason that Spinoza's attempts to incorporate secular learning are so instructive. In his earliest writing Spinoza appears to follow the single-truth theory, inherited from his medieval forebears, according to which truth does not contradict truth:

[29] *Tractatus Theologico-Politicus*, tr. Samuel Shirley (Leiden, 1991), 74.

[30] See Blackwell, *Galileo, Bellarmine, and the Bible*, 36.

> Finally, if any other passages which give rise to scruples still occur in Sacred Scripture, this is not the place to explain them ... the truth does not contradict the truth, nor can Scripture teach such nonsense as is commonly supposed. For if we were to discover in it anything that would be contrary to the natural light, we could refute it with the same freedom which we employ when we refute the Koran and the Talmud. But let us not think for a moment that anything could be found in Sacred Scripture that would contradict the natural light.[31]

According to this paradigm, adopted by many medieval Jewish philosophers, there is nothing in Scripture that could contradict the "natural light" of reason; there is only one fact of the matter, and both Scripture and reason are reflective of that reality. But in the *Tractatus* Spinoza postulates the incommensurability of religion and science: the authority of the prophets carries weight only in matters concerning morality and true virtue; in other matters their beliefs are irrelevant.

> Now I found nothing expressly taught in Scripture that was not in agreement with the intellect or that contradicted it, and I also came to see that the prophets taught only very simple doctrines easily comprehensible by all.... So I was completely convinced that Scripture does not in any way inhibit reason and has nothing to do with philosophy, each standing on its own footing.... I show in what way Scripture must be interpreted, and how all our understanding of Scripture and of matters spiritual must be sought from Scripture alone, and not from the sort of knowledge that derives from the natural light of reason.[32]

Here Spinoza argues for a model according to which faith (theology) and reason (philosophy) occupy different realms: "we may maintain as incontrovertible that neither is theology required to be subordinated to reason nor reason to theology, and that each has its own domain. The domain of reason, we have said, is truth and wisdom, the domain of theology is piety and obedience."[33] By removing theology from the domain of truth-functionality, Spinoza paved the way for the independence of philosophical (and scientific) truth on the one hand and religious doctrine on the other. Note that this move paves the way to denying religious "truth" altogether.

[31] *Appendix to Descartes' Principles* in *The Collected Works of Spinoza*, tr. Edwin Curley (Princeton, 1985), 331.

[32] *Tractatus*.

[33] *Tractatus*, 232.

Two Texts, Two Heresies

Galileo composed his *Letter to the Grand Duchess Christina* in order to counteract the claims of his detractors who have "tried on their own to spread among common people the idea that such propositions are against Holy Scripture, and consequently damnable and heretical."[34] Galileo's purpose in this work is to demonstrate that modern science does not undermine the integrity of Scripture. He points out that Copernicus himself was a Catholic and did not ignore the Bible but "understood very well that if his doctrine was demonstrated, then it could not contradict the properly interpreted Scripture."[35] Galileo must therefore propound a theory of interpretation that preserves the meaning of Scripture while at the same time recognizes the authority of scientific inquiry. His underlying principle is that Scripture and nature both reflect the teachings of God. In the case of natural phenomena "one must begin not from the authority of scriptural passages but from sensory experience and necessary demonstrations. For the Holy Scripture and nature derive equally from the Godhead."[36]

The process of reconciling Scripture and science is an old one, however, and the early Church fathers had much experience in the matter, for the question of exegetical interpretation of Scripture among the Church fathers goes back at least to Augustine. McMullin lays out five working principles in Galileo's *Letter*, at least four of which are traceable back to Augustine, and of the five, three of these principles are reflected in Spinoza's *Tractatus* as well.

The *Principle of Accommodation* (*PA*) tells us that the choice of language in the scriptural writings is accommodated to the capacities of the intended audience.[37] Galileo points out that often the Bible is recondite and "very different from what appears to be the literal meaning of the words."[38] These things were said in that manner "in such a way as to accommodate the capacities of the very unrefined and undisciplined masses."[39] Galileo's *Principle of Accommodation* reappears in full force in Spinoza's *Tractatus*, functioning as the leitmotif of the entire work. According to Spinoza, Scripture was written in a certain way for the common people: "Therefore, since the whole of Scripture was revealed in the first place for an entire nation, and eventually for all mankind, its contents had to be adapted particularly to the understanding of the common people, and it had to appeal only to experience."[40]

[34] "Galileo's Letter to the Grand Duchess Christina," *The Galileo Affair: A Documentary History*, ed. Maurice A. Finocchiaro (Berkeley, 1989), 89.

[35] *Letter*, 91.

[36] *Letter*, 93.

[37] Ernan McMullin, "Galileo on Science and Scripture," *The Cambridge Companion to Galileo*, ed. Peter Machamer (Cambridge, 1998), 296.

[38] *Letter*, 92.

[39] *Letter*, 92.

[40] *Tractatus*, 120.

The idea that Scripture must be accommodated to the capacities of the intended audience is a mainstay of medieval Jewish philosophy and hermeneutics. That "Scripture speaks the language of man" (*Scriptura humane loquitur*) comes from the Hebrew *dibra tora kileshon bne 'adam*, which first appears in Jewish legal contexts.[41] This becomes a hermeneutical principle that is used by Sa'adia Gaon and other Jewish philosophers in the ninth and tenth centuries.

Because the meaning of Scripture is so abstruse, both Galileo and Spinoza claim the importance of the *Principle of Prudence* (*PP*), namely, that when trying to discern the meaning of a difficult scriptural passage, different interpretations may be possible. Inasmuch as further progress in the search for truth may later undermine any one interpretation, readers ought not run into premature commitment to any of these.[42] Since truth cannot contradict truth, Galileo states, it is imperative to interpret the Bible when it appears to contradict science. But, he cautions, "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."[43]

Galileo ostensibly distinguishes two types of propositions, suggesting that we need two different methodological approaches to deal with them:

> in the learned books of worldly authors are contained some propositions about nature which are truly demonstrated and others which are simply taught; in regard to the former, the task of wise theologians is to show that they are not contrary to Holy Scripture; as for the latter (which are taught but not demonstrated with necessity), if they contain anything contrary to the Holy Writ, then they must be considered indubitably false and must be demonstrated by every possible means.[44]

This distinction is reiterated as Galileo distinguishes those propositions "of a type such that by any human speculation and reasoning one can only attain a probable opinion and verisimilar conjecture about them, rather than a certain and demonstrated science,"[45] and propositions of which "either one has, or one may firmly believe that it is possible to have, complete certainty on the basis of experiments, long observations, and necessary demonstrations."[46] Taking the second set of propositions as containing two distinct sub-sets, there are three distinct types of propositions which must be reconciled with Scripture:

[41] Funkenstein, *Theology and the Scientific Imagination*, 213.
[42] McMullin, "Galileo on Science and Scripture," 292.
[43] *Letter*, 96.
[44] *Letter*, 101-2.
[45] *Letter*, 104.
[46] *Letter*, 104.

1 Propositions that are plausible with respect to science, but which have no likely demonstration
2 Propositions that have been shown to be true by means of rigorous demonstration
3 Propositions that are very likely to be shown to be true in the future, but for which no demonstration has yet been achieved

The question is how to adjudicate between these three types of propositions. In the first case Galileo tells us that "it is appropriate piously to conform absolutely to the literal meaning of Scripture."[47] In the second case, the true sense of the Bible must and does reflect the proposition in question, for truth cannot contradict truth. The real question is what to do with the third type of proposition, namely, one that has not yet been demonstrated. Can it be maintained that, inasmuch as such propositions have not yet been demonstrated, that Scripture takes precedence? This third class, of course, has grave consequences for the status of Copernicanism.

Not surprisingly, we see the same *Principle of Prudence* appropriated by Spinoza but used for more radical ends than envisioned by Galileo. In a letter to Oldenberg written in 1665 he states two explicit aims, to enable ordinary humans to engage in philosophical thinking by freeing them from the errors and prejudices of the theologians, and to free philosophy itself from the shackles and authority of religious authorities.[48] In order to achieve his aims Spinoza sees as his task the development of a biblical hermeneutic that can allow for a new understanding of Scripture that does not enslave philosophy or would-be philosophers. In the preface to the *Tractatus* Spinoza rails against those who "do not even glimpse the divine nature of Scripture, and the more enthusiastic their admiration of these mysteries, the more clearly they reveal that their attitude to Scripture is one of abject servility rather than belief."[49] Because of their anti-intellectual attitude toward Scripture, nothing is left of the old religion but "the outward form."[50] Therefore Spinoza resolves to "examine Scripture afresh, conscientiously and freely, and to admit nothing as its teaching which I did not most clearly derive from it."[51]

But Spinoza was not working in an exegetical vacuum.[52] Like Galileo, who hearkened back to Augustine for his spiritual guidance and inspiration, Spinoza could already find in prior Jewish thinkers paradigms for biblical interpretation that were developed in order to accommodate the new science of their day. I refer not to Philo, whose revolutionary methods of exegesis were not incorporated

[47] *Letter*, 104.
[48] Wolf, *The Correspondence*, 206; *Letter to Oldenberg*, 30.
[49] *Tractatus*, 53.
[50] *Tractatus*, 52
[51] *Tractatus*, 53-54.
[52] See Curley, "Notes on a Neglected Masterpiece," 77.

into the Jewish mainstream but to Maimonides and Ibn Ezra who were already leaders in biblical criticism. Their ideas were carried out to fruition in Spinoza's *Tractatus*. In an attempt to systematize theology with the "new" science of Aristotle, they too had to embark on a critical and philosophical interpretation of Scripture. This process was perfected by Gersonides who, in his commentary to the *Song of Solomon*, presented the work as representative of an entire Aristotelian metaphysics.[53]

But how to accommodate science and Scripture is the concern of both Galileo and Spinoza. Galileo implies, although he never explicitly articulates, three additional principles in the *Letter*. The first is what McMullin calls the *Principle of Priority of Demonstration* (*PPD*), which states that when there is a conflict between a proven truth about nature and a particular reading of Scripture, an alternative reading of Scripture must be sought.[54] For example, Galileo tells us that "a natural phenomenon which is placed before our eyes by sensory experience or proved by necessary demonstrations should not be called into question, let alone condemned, on account of scriptural passages whose words appear to have a different meaning."[55] Thus *PPD* is applicable to the second set of propositions adduced above.

The *Principle of Priority of Scripture* (*PPS*) suggests that when there is an apparent conflict between a scriptural passage and an assertion about the natural world grounded on sense or reason, the literal reading of the scriptural passage should prevail as long as the latter assertion lacks demonstration.[56] Galileo claims that Scripture has ultimate priority in cases where demonstration is lacking: "Moreover, even in regard to those propositions which are not articles of faith, the authority of the same Holy Writ should have priority over the authority of any human writings containing pure narration or even probable reasons, but no demonstrative truths."[57] This principle clearly applies to the first set of propositions; it is not clear, however, whether Galileo means for it to apply to the second set as well.

Finally, the *Principle of Limitation* (*PL*) suggests 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. This principle appears often in the *Letter*. There are limits to human knowledge, says Galileo, and so the authority of the Bible was designed to persuade men of those articles and propositions that, surpassing all human reasoning, could not be made credible by science.[58] Further, we do not look to the Bible for astronomy.[59] Finally,

[53] Frederick Pollock, *Spinoza: His Life and Philosophy* (London, 1880), 93; and see Levi ben Gerson, *Commentary on the Song of Songs*, tr. Menachem Kellner (New Haven, 1998).

[54] McMullin, "Galileo on Science and Scripture," 294.

[55] *Letter*, 93.

[56] McMullin, "Galileo on Science and Scripture," 295.

[57] *Letter*, 94.

[58] *Letter*, 94.

[59] *Letter*, 94.

quoting Cardinal Baronius, Galileo reiterates that the purpose of Scripture is not to teach science: "the intention of the Holy Spirit is to teach us how one goes to heaven and not how heaven goes."[60] Again, *PL* helps us with the first but not the third set of propositions.

To summarize, Galileo assures his readers that when science is certain, it takes precedence over Scripture (*PPD*); in these cases Scripture must be reinterpreted to accord with scientific findings. When science falls short of certitude, however, Scripture must not be interpreted in light of science (*PP*). But what about the third class of propositions iterated above: are they subject to *PPS*, *PPD*, or *PP*? *PPS* and *PP* tell us that if Copernicanism has not been yet demonstrated conclusively, it should be rejected in favor of Biblical cosmology. The real question, then, is what to do in a case where it is possible for science to be proved conclusively in the near future (as in the case of Copernicanism), in contradistinction to those cases in which the question cannot in principle be determined. Galileo would like to be able to maintain that when properly applied, these principles eliminate conflict between Copernican cosmology and Scripture. However, as McMullin has convincingly argued, the real problem arises when the application of these very principles is in question.[61]

It is here that Spinoza's more radical spirit is manifested. Spinoza shares with Galileo the notion that God has written two books: the book of the Law and the book of nature. Where he differs from Galileo is in his rejection of *PPS*: that is, in his insistence that scientific method should be used exclusively for both books. In the *Tractatus*, Spinoza introduces what I shall call the *Principle of the Priority of Natural Method* (*PPNM*):

> Now to put it briefly, I hold that the method of interpreting Scripture is no different from the method of interpreting Nature [*dico methodum interpretandi Scripturam haud differre a methodo interpretandi naturam*], and is in fact in complete accord with it. For the method of interpreting Nature consists essentially in composing a detailed study of Nature from which, as being the source of our assured data, we can deduce the definitions of the things of Nature. Now in exactly the same way the task of Scriptural interpretation required us to make a straightforward history of Scripture [*sic etiam ad Scripturam interpretandam necesse est ejus sinceram historiam adornare*] and from this, as the source of our fixed data and principles, to deduce by logical inference the meaning of the authors of Scripture.[62]

[60] *Letter*, 96.
[61] McMullin, "Galileo on Science and Scripture," 316.
[62] *Tractatus*, 141.

In chapter six of the *Tractatus* Spinoza reiterates that methods used in natural science must be applied to our understanding of Scripture. The Bible must be read and understood naturalistically, that is, in terms of the laws of physical causation. By nature Spinoza means the causal nexus of the universe (which is described in the *Ethics*), which leaves no room for divine causation. Spinoza now draws out the implications with respect to our understanding of miracles, arguing that inasmuch everything in Scripture must accord with the laws of nature, it follows that whatever in Scripture contravenes nature must be rejected.[63]

Finally, Spinoza introduces the *Principle of Intrinsic Meaning and Truth* (*PMT*), claiming that there must be a good understanding of the nature and properties of the language in which the text was written and in which the authors spoke. *PMT* replaces Galileo's *PL*, which specified that Scripture does not address matters of science. Spinoza carefully separates the meaning of the text from its truth.[64] Truth is defined as the function of reason and is separate from Scripture. In a move more radical than Galileo, Spinoza concludes that "Scripture cannot speak the truth."[65] Scripture can give us moral claims, but "we should be careful not to confuse moral claims, however salutary, from epistemic truths."[66] It is not just that Scripture does not tell us "how the heavens go," but that Scripture does not tell us how "anything at all goes." For Spinoza there is only one meaning to a scriptural text, and if that meaning is stupid or contravenes reason, then so much the worse for Scripture. The implications of Spinoza's methodology become apparent when we turn now to Joshua 10:12-13, which serves as a proof-text for both Galileo and Spinoza.[67]

Joshua 10:12-13

The text from Joshua 10:12-13 reads as follows. Joshua and his men are worried that there will not be sufficient time to defeat the five Amorite kings, and so

> Joshua addressed the Lord; he said in the presence of the Israelites: "Stand still, oh sun, at Gibeon, Oh moon, in the Valley of Ajalon!" and the sun stood still and the moon halted, while a nation wreaked judgment on its foes ... thus the sun halted in midheaven, and did not press on to set, for a whole day.

[63] *Tractatus*, 134.

[64] See Steven B. Smith, *Spinoza, Liberalism, and the Question of Jewish Identity* (New Haven, 1997), 59.

[65] Smith, *Spinoza*, 66.

[66] Smith, *Spinoza*, 66.

[67] Both Galileo and Spinoza utilize other proof-texts as well, notably II Kings. See Bernard R. Goldstein, "Galileo's Account of Astronomical Miracles in the Bible: A Confusion of Sources," *Nuncius*, V (1990), 1-16.

For Galileo, the question is one of straightforward biblical exegesis and reflects his use of both *PPD* and *PA*, namely, how to reconcile this passage with the new science.[68] Galileo argues that under the Ptolemaic system, the example "in no way can happen."[69] For if the sun

> stops its own true motion, the day becomes shorter and not longer and that, on the contrary, the way to prolong it would be to speed up the sun's motion; thus, to make the sun stay for some time at the same place above the horizon, without going down toward the west, it would be necessary to accelerate its motion so as to equal the motion of the Prime Mobile, which would be to accelerate it to about three hundred and sixty times its usual motion.[70]

And so if Joshua had wanted the day to be lengthened, he should have ordered the sun to accelerate its motion in such a way that the impulse from the *primum mobile* would not carry it westward. On the Ptolemaic system, therefore, we must reinterpret Joshua's words: "given the Ptolemaic system, it is necessary to interpret the words in a way different from their literal meaning."[71] If we assume that Joshua had any astronomical knowledge, we can say that his primary purpose was to demonstrate to the masses a miracle, and not to teach astronomy. Joshua simply stooped to their capacity and "adapted himself to their knowledge and spoke in accordance with their understanding because he did not want to teach them about the structure of the spheres but to make them understand the greatness of the miracle of the prolongation of the day."[72] This is not a case in which the explicit meaning of Scripture can be maintained on the basis of a geocentric model.

The question for Galileo, then, is whether the events in Joshua can be rendered consistent with the Copernican system. In fact Galileo argues that only heliocentrism can make sense of this example. Assume, he says, that the sun revolves upon its own axis (as Galileo had recently demonstrated in his *Letters on Sunspots*). By this rotation, it infuses both light and motion into the bodies that surround it. If the rotation of the sun were to stop, so too would the rotation of all these bodies. And so when God willed that at Joshua's command the whole system of the world should rest, it sufficed to make the sun stand still. Upon its stopping, all the other revolutions ceased: "in this manner, by stopping the sun,

[68] See Goldstein, "Galileo's Account of Astronomical Miracles in the Bible," arguing that Galileo depended upon Magalhaens's *Commentary on Joshua* and Gersonides' commentary upon Joshua.

[69] *Letter*, 114.

[70] *Letter*, 115.

[71] *Letter*, 115.

[72] *Letter*, 115.

and without changing or upsetting at all the way the other stars appear or their mutual arrangement, the day on the earth could have been lengthened in perfect accord with the literal meaning of the sacred text."[73]

A fringe benefit of Galileo's heliocentric interpretation is that he is able to give a clever reading of the next phrase, namely that the sun stood still "in the midst of the heavens" (Joshua 10:13). Classical theologians have had a difficult time with this statement, for if it meant that the sun was at the meridian, there would be no reason for a miracle at the time of Joshua's prayer; but if the sun were setting when Joshua asked for cessation of movement, it's not clear how to explain the phrase "in the midst." Galileo's interpretation is that by "in the midst of the heavens" we should understand that the sun is at the center of the celestial orbs and planetary rotations, in accordance with Copernican heliocentrism. Thus at any hour of day we can say that the sun stands "at the center of the heavens, where it is located."[74]

For Spinoza the Joshua example is used to bring home his rejection of supernatural miracles. Within his new mechanistic philosophy Spinoza argues that every event falls within a comprehensive system of causal laws (there can be no random events), and that these causal laws possess the same kind of necessity as the laws of mathematics and logic. He then shows how biblical miracles can be explained in naturalistic terms.[75]

But here, too, Spinoza had historical precedents in Jewish philosophy.[76] In the *Guide* Maimonides had already eliminated supernaturalistic interpretations of miracles and had begun the reductionist process of explaining miracles in naturalistic terms. In the context of demonstrating that the miracles wrought by other prophets differ from those of Moses, Maimonides uses Joshua 10:11-12 as an example of a prophecy which occurs in front of some, but not all, of the people. Maimonides goes on to explain the text as claiming that the miracle consisted in the prolongation of daylight without any change in the course of the sun, so that in Gibeon the day was longest but in other places not.[77] Gersonides is even more explicit than Maimonides, arguing that it is impossible for the sun to have stood still for Joshua. According to Gersonides, the miracle consists in the fact that the victory was achieved during the short period of time in which the

[73] *Letter*, 117.

[74] *Letter*, 118.

[75] See Nicholas Jolley, "The Relation between Theology and Philosophy," *The Cambridge History of Seventeenth-Century Philosophy*, ed. Daniel Garber and Michael Ayers (Cambridge, 1998), 386.

[76] See Seymour Feldman, " 'Sun Stand Still'—A Philosophical Astronomical Midrash," *Proceedings of the Ninth World Jewish Congress of Jewish Studies* (Jerusalem, 1986), 77-84; and Dov Schwarz, "Did the Sun Stand Still For Joshua? On the Doctrine of Miracles, as Mirrored in Jewish Medieval Thought (Hebrew)," *Da'at*, 42 (1999), 33-62.

[77] See Maimonides, *The Guide of the Perplexed*, tr. S. Pines (Chicago, 1963), II.35, 368-69.

sun at its zenith appeared to be stopped.[78] And so what was implicit in Maimonides is spelled out explicitly by Gersonides.

Against the backdrop of these medieval discussions Spinoza uses Joshua 10:12-13 in an attempt to rule out supernatural miracles. All the commentators, says Spinoza, try to demonstrate that the prophets knew everything attainable by human intellect. He takes Joshua 10.11 as an example, stating that

> Do we have to believe that the soldier Joshua was a skilled astronomer, that a miracle could not be revealed to him, or that the sun's light could not remain above the horizon for longer than usual without Joshua's understanding the cause? Both alternatives seem to me ridiculous.[79]

In contradistinction to Galileo who tried to grant Joshua the benefit of the doubt, Spinoza's conclusion is that we cannot expect scientific knowledge of the prophets. According to Spinoza, Joshua was a simple prophet who, confronted with an unusual natural phenomenon, namely "excessive coldness of the atmosphere," attributed to this phenomenon a supernaturalistic explanation. "Knowledge of science and of matters spiritual" should not be expected of prophets.[80] For Spinoza, then, there is no room for *derash*, for interpretative hermeneutics: the Bible must be interpreted literally. Scripture must use Scripture itself to accomplish this. Either the biblical text is compatible with our rational conceptions or it is not; and if it is not, it must be rejected.

Conclusion

Both Galileo and Spinoza are very much drawn to the paradigm of mathematical certainty as exemplified by geometry. Furthermore, both authors incorporate this paradigm of certainty into their characterization of the new science, and both see the new science as a tool to understanding the underpinnings of nature. Neither author, however, is fully successful in applying the criteria of certainty represented by the new science to the sphere of theology. To Galileo's chagrin, he did not yet have available the empirical evidence he needed to prove Copernican cosmology true. His espousal of *PPS* was questionable, as evidenced by the Joshua example. Although Galileo did not have definitive evidence supporting Copernicanism, nevertheless he felt no compunctions against offering a

[78] Gersonides, *The Wars of the Lord: Book V and VI*, tr. Seymour Feldman (Philadelphia, 1999), III, 492-93. See also Goldstein, "Galileo's Account of Astronomical Miracles," 7. Abravanel was so furious at Gersonides' elimination of such a famous miracle, that he wrote a commentary on Joshua 10 in contradistinction to Gersonides; see Charles Touati, *La Pensée Philosophique et Théologique de Gersonide* (Paris, 1973), 470.

[79] Spinoza, *Tractatus*, 79.

[80] Spinoza, *Tractatus*, 86.

heliocentric reading of Joshua 10:11-12 in order to save Scripture without compromising science. On the other hand Spinoza's adherence to scientific method in interpreting Scripture forced him to reject divine authorship altogether. The evidence of so many internal inconsistencies within Scripture precludes the postulation of single authorship. Spinoza's more radical move, a move not contemplated by Galileo, consisted in denying that there is scientific truth to be found at all in Scripture. No longer does Spinoza believe in "one truth" reflected two ways; nor does he believe that Scripture can be accommodated to the new science. Rather, there can only be moral guidance to be found in Scripture, not moral truth and certainly not scientific truth. According to Spinoza, those who, like Galileo, try to reinterpret Scripture to accord with heliocentrism have missed the point of both theology and science.

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