

Galileo's Letter to the Grand Duchess Christina

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...These people [Galileo's critics] are aware that in my astronomical and philosophical studies, on the question of the constitution of the world's parts, I hold that the sun is located at the center of the revolutions in the heavenly orbs and does not change place, and that the earth rotates on itself and moves around it. Moreover, they hear how I confirm this view not only by refuting Ptolemy's and Aristotle's arguments, but also by producing many for the other side, especially some pertaining to physical effects whose causes perhaps cannot be determined in any other way, and other astronomical ones dependent on many features of the new celestial discoveries; these discoveries clearly confute the Ptolemaic system, and they agree admirably with this other position and confirm it. Now, these people are perhaps confounded by the known truth of the other propositions different from the ordinary..., and so they may lack confidence to defend themselves as long as they remain in the philosophical field. Therefore, since they persist in their original self-appointed task of beating me down and my findings by every imaginable means, they have decided to try to shield the fallacies of their arguments with the cloak of simulated religiousness and with the authority of the Holy Scriptures, unintelligently using the latter for the confutation of arguments they neither understand nor have heard.

...So the reason they advance to condemn the opinion of the earth's mobility and sun's stability is this: since in many places in the Holy Scripture one reads that the sun moves and the earth stands still, and since Scripture can never lie or err, it follows as a necessary consequence that the opinion of those who want to assert the sun to be motionless and the earth moving is erroneous and damnable.

The first thing to note about this argument is the following. It is most pious to say and most prudent to take for granted that Holy Scripture can never lie, as long as its true meaning has been grasped; but I do not think one can deny that this is frequently recondite and very different from what appears to be the literal meaning of the words. From this it follows that, if in interpreting it someone were to limit himself always to the pure literal meaning, and if the latter were wrong, then he could make Scripture appear to be full not only of contradictions and false propositions, but also of serious heresies and blasphemies; for one would have to attribute to God feet, hands, eyes, and bodily sensations, as well as human feelings like anger, contrition, and hatred, and such conditions as the forgetfulness of things past and the ignorance of future ones. Since these propositions dictated by the Holy Spirit were expressed by the sacred writers in such a way as to accommodate the capacities of the very unrefined and undisciplined masses, therefore for those who deserve to rise above the common people it is necessary that wise interpreters formulate the true meaning and indicate the specific reasons why it is expressed by such words. This doctrine is so commonplace and so definite among all theologians that it would be superfluous to present any testimony for it.

From this I think one can very reasonably deduce that, whenever the same Holy Scripture has seen fit to assert any physical conclusion (especially on things that are abstruse and

difficult to understand), it has followed the same rule, in order not to sow confusion into the minds of the common people and make them more obstinate against dogmas involving higher mysteries. In fact, as I said and as one can clearly see, for the sole purpose of accommodating popular understanding, Scripture has not abstained from concealing the most important truths, attributing even to God characteristics that are contrary to or very far from His essence; given this, who will categorically maintain that in speaking incidentally of the earth, water, sun, or other created thing Scripture has set aside such regard and chosen to limit itself rigorously to the literal and narrow meanings of the words? This would be especially implausible when mentioning features of these created things that are very remote from popular understanding and are not at all pertinent to the primary purpose of the Holy Writ, that is, to the worship of God and the salvation of souls.

Therefore, I think that in disputes about natural phenomena one must begin not with the authority of scriptural passages, but with sense experiences and necessary demonstrations. For the Holy Scripture and nature derive equally from the Godhead, the former as the dictation of the Holy Spirit and the latter as the most obedient executrix of God's orders; moreover, to accommodate the understanding of the common people it is appropriate for Scripture to say many things that are different (in appearance and in regard to the literal meaning of the words) from the absolute truth; on the other hand, nature is inexorable and immutable, never violates the terms of the laws imposed upon her, and does not care whether or not her recondite reasons and ways of operating are disclosed to human understanding; but not every scriptural assertion is bound to obligations as severe as every natural phenomenon; finally, God reveals Himself to us no less excellently in the effects of nature than in the sacred words of Scripture, as Tertullian perhaps meant when he said, "We postulate that God ought first to be known by nature, and afterwards further known by doctrine—by nature through His works, by doctrine through official teaching"; and so it seems that a natural phenomenon that is placed before our eyes by sense 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.

However, by this I do not wish to imply that one should not have the highest regard for passages of Holy Scripture; indeed, after becoming certain of some physical conclusions, we should use these as very appropriate aids to the correct interpretation of such Scriptures and to the investigation of the truths they must contain, for they are most true and agree with demonstrated truths. That is, I would say that the authority of Holy Scripture aims chiefly 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 himself. Moreover, even in regard to those propositions that are not articles of faith, the authority of the same Holy Writ should have priority over the authority of any human works composed not with the demonstrative method but with either pure narration or even probable reasons; this principle should be considered appropriate and necessary inasmuch as divine wisdom surpasses all human judgment and speculation. However, I do not think one has to believe the same God who has given us senses, language, and intellect would want to set aside the use of these and give us by other means the information we can acquire with them, so that we would deny

our senses and reason even in the case of those physical conclusions that are placed before our eyes and intellect by our sense experiences or by necessary demonstrations. This is especially implausible for those sciences discussed in Scripture to a very minor extent and with disconnected statements; such is precisely the case of astronomy, so little of which is contained therein that one does not find there even the names of the planets, except for the sun, the moon, and only once or twice Venus, under the name of the Morning Star. Thus, if the sacred authors had had in mind to teach people about the arrangement and motions of the heavenly bodies, and consequently to have us acquire this information from Holy Scripture, then, in my opinion, they would not have discussed so little of the topic—that is to say, almost nothing in comparison with the innumerable admirable conclusions that are contained and demonstrated in this science. Indeed, 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 the motions of the heavens and of the stars, and their shape, size, and distance, but that they deliberately refrained from doing it, even though they knew all these things very well.