

The Commentaries of Proclus on the First  
Book of Euclid's Elements of Geometry  
Translated by Thomas Taylor  
(London, 1792)  
Book I, Chapter 9

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## CHAP. IX.

### *A Solution of an Objection raised by some against the Utility of the Mathematical Sciences.*

BUT some, who are prone to contradiction through those who wish to subvert geometry, endeavour to destroy the dignity of this science. One part, indeed, depriving it of ornament and good, because it does not discourse on these. But another part<sup>15</sup> affirming that sensible experiments are more useful than the universal objects of its speculation; I mean, that Geodesia (for instance,) or the mensuration of the earth, is preferable to geometry, and vulgar arithmetic to that arithmetic which is conversant with theorems alone: and that nautical astrology is more useful than that which teaches universally, abstracted from any application to sensible concerns. For we are not, say they, made rich by our knowledge of riches, but by using them; nor are we happy by the merely understanding felicity, but by living happily. Hence we must confess that those mathematical sciences, which are conversant with cognition, do not profit human life, and confer to action, but those only which are engaged in exercise. For those who are ignorant of the reasons of things, but are exercised in particular and sensible experiments, are in every respect more excellent, for the purposes of human life, than those who are employed in contemplation alone. Against objections, then, of this kind, we shall reply, by shewing the beauty of the mathematical disciplines from those arguments by which Aristotle endeavours to persuade us. We must therefore confess that there are three things which especially cause beauty, both in bodies and souls; I mean, order, convenience, and determination. Since corporeal baseness, indeed, arises from material inordination, deformity, and inconvenience, and from the dominion of the indefinite in the composite body. But the baseness of the soul originates from its irrationality, and inordinate motion, and from its being in a state of discord with reason, and not receiving from thence its proper limitation. Hence, beauty exists even in contraries,

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<sup>15</sup>I am sorry to say, that this part of the enemies to pure geometry and arithmetic, are at the present time very numerous; conceptions of utility in these sciences, extending no farther than the sordid purposes of a mere animal life. But surely, if intellect is a part of our composition, and the noblest part too, there must be an object of its contemplation; and this, which is no other than truth in the most exalted sense, must be the most noble and useful subject of speculation to every rational being.

by means of order, convenience, and determination. But we may behold these in a more eminent degree in the mathematical science; order, indeed, in the perpetual exhibition of things posterior and more various, from such as are primary and more simple; for things subsequent are always annexed to their precedents, the latter ranking as principles, and the former as the first suppositions of things consequent: but convenience is evinced in the mutual consonance of things demonstrated, and in the relation of all of them to intellect, since intellect is the common measure of all science, from which it receives its principles, and to which it converts the learner: but determination is perceived in its perpetually abiding and immoveable reasons, for the objects of its knowledge are not, at times, subject to variation, like those of opinion and sense, but present themselves for ever the same, and are bounded by intellectual forms. If such then, are the principal requisites of beauty, it is evident, that in these sciences that illustrious ornament and gracefulness is found. For how is it possible this should not be the case with a science receiving a supernal illumination from intellect, to which it continually advances, hastening to transfer us from the obscure light of sensible information? With respect to the second objection, we think it proper to judge of its utility, without regarding the conveniencies and necessities of human life. For otherwise, we must confess that contemplative virtue is also useless, which separates itself from human concerns, which it is very little desirous to look down upon and understand. Indeed Socrates, in the *Theætetus*, affirming this concerning noblemen endued with the prophetic power, says, “that it withdraws them from all regard to human life, and raises their thoughts, properly liberated, from all necessity and use, to the very summit of all true being. The mathematical science, therefore, must be considered as desirable for its own sake, and for the contemplation it affords, and not on account of the utility it administers to human concerns. But if it is necessary to refer the utility it produces to something different from itself, it must be referred to intellectual knowledge. For it leads us to this, and prepares the eye of the soul for the knowledge of universals, removing and obliterating the impediments arising from the senses, and from corporeal involution. As therefore we call the whole of purgative virtue useful, or the contrary, not regarding the use of the sensible life, but of that which is contemplative, so indeed it is requisite to refer the end of mathematics to intellect, and universal wisdom. Hence its energy is worthy our study, both on its own account, and on account of an intellectual life. But it appears, as Aristotle<sup>16</sup> says, that this science is desirable of itself to its votaries, because though no reward is proposed to its enquirers, yet the mathematical contemplation receives,

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<sup>16</sup>In the 13th book of his *Metaphysics*, cap. iii.

in a small time, an abundant increase. Besides, this is farther evident from hence, that all men are willingly employed in its pursuit, and wish to dwell on its speculations, omitting every other concern; even those who have, with their lips, as it were, but just touched its utility. And hence it follows, that they who despise the knowledge of the mathematical disciplines, have very little tasted of the pleasures they contain. The mathematics, therefore, are not to be despised because their speculative parts do not immediately confer to human utility, (for the ultimate limits of its progressions, and whatever operates with matter, consider a use of this kind;) but on the contrary we should admire its immateriality, and the good which it contains, considered by itself alone. For when mankind were entirely disengaged from the care of necessary concerns, they converted themselves to the investigation of the mathematical disciplines, and this, indeed, with the greatest propriety. Since affairs fimilar to human life in its most imperfect state, and which are immediately connected with its origin, first of all employed the studies of mankind: but, in the second place, those concerns succeeded which separate the soul from generation, and restore its memory of that which IS. After this manner, then, we are engaged in necessities, before things honourable for their own sakes, on account of their intrinsic dignity and worth; and in things related to sense, before such as are apprehended by the nobler energies of mind. For every origin and life of the soul which is converted into herself, is naturally adapted to proceed from the imperfect to the perfect. And thus much against those who despise the mathematical science.