

Physical Disputation II

Presided By Cornelius Martini

Respondent: Bartholdus Neuhaus

Translated by Jared Mindel

**To the religious, most illustrious, and most learned man,
Master Detlev Rasch,**

Dean of the Verden Chapter of St. Andrew,
an old, upright, and most dear friend—
greetings.

Johannes Caselius

I shall begin this letter to you, Detlev Rasch, from a point somewhat higher than is customary—perhaps, in my own judgment, with a touch of severity—yet befitting the age of us both: yours now advanced, mine long since worn down by old age. Either there is in our day—indeed in every age—an exceedingly abundant crop of evils; or else the evils that do exist are always observed more easily and felt more keenly. That one or the other is the case is confirmed by the grave and perpetual complaints of the human race. For nearly all of us bewail both private and public affairs, though hardly anyone is free from blame. Those, however, whom long life has subdued—when they complain, they also take upon themselves some measure of care, so that, where they have seen others err, or have erred themselves, there may be less error in the future, and fewer people go astray, even if old men too often “wash a brick” (that is, spend their efforts in vain). For good arguments profit little with most people—a truth I increasingly experience in that form of life which we cultivate. I refer to that part of it which is first and most necessary, yet also despised by many of our own order. For what is held in greater contempt than letters—and we who devote diligent labor to the education of early youth? Yet this ignorance, or rather malice, if it must be borne or dissimulated in others, certainly ought not to be found in those who, having risen by the benefit of letters, and being increased in honors, wealth, authority, and sometimes even in command, look down on the more humble and modest, nor give support—though they easily could—to those who faithfully serve true education, the education of the young. For only those can be judged to serve faithfully who seek the good of each individual and at the same time the welfare of the community; and this intention of mine, so far from ever repenting of it, I have held firmly, even though no private advantage has accrued to me— or, if any has, it has been credited to my office, and to this very day continues to be so. Nor am I ashamed, even in this last stage of life, to labor in those things which are first and are deemed base—without which no one ascends to higher things. Many, filled with their own pretensions, arrogate everything to themselves, and enact rather a theatrical display than cultivate this toilsome life rightly, modestly, and religiously. Yet let those who are such enjoy the imagined blessedness of their own opinions. I judge them happier, more honorable, and wiser who believed that not even the least matters—whatever contributed to truth and virtue—should be neglected; and that such things ought to be investigated and handed down to many. Among these, many have earned immortal fame, who considered the smallest matters no less than the greatest to belong to their care. But it belongs to history, not to a letter, to rehearse their praises. Among the foremost of the ancients I place Palamedes, who discovered the letters and imparted them to

the Greeks, setting before their eyes that divine treasure by which so many nations have benefited. Indeed, to write a more complete treatise about him alone would not be difficult for a learned man. A great benefit likewise was that of Chiron, the educator of Greece's heroes. To this class must also be referred Epicharmus, Plato, Aristotle, Varro, Cicero, and all those whose footsteps it has not wearied me to follow. Why then should it weary or shame us to do the same? Indeed, ashamed should he be—and sorry too—who is less so, since the mightiest kings, when they themselves could not exercise this discipline, being occupied with perpetual affairs of war and peace, decreed for the public good that this life—long considered common, leisure-bound, and yet burdened with continual labors of mind and spirit (to say nothing of the unbroken toil of daily work)—should be publicly upheld. All are like kings, whether princes or cities, who emulate this royal act and its magnificence. From this topic a whole book could again easily arise for me; yet desiring brevity, I shall perhaps already be straying beyond the limits of a letter. But since I write to you, I must not pass over in silence the founder of this school, the same man who was Bishop of Verden and Lübeck, Eberhard, the everlasting ornament of the Holstein family. He, prompted by a prudent and faithful counselor, Theobald Grummer, gave this illustrious school its beginning and laid its solid foundation. You yourself know, Detlev Rasch, how he entrusted that scholastic task to me, a man of the academy. I found two young men to whom, in my judgment, the education of youth toward virtue, piety, and learning could rightly be entrusted: yourself, Detlev Rasch, and Vitus Guildius. You had become known to me—more than forty years ago—for your talent, your learning, your sharp diligence, and your integrity. Later, when you became a member of my household, you confirmed my earlier judgment about you. With your service committed to that Prince, you went to Verden: a young man learned, industrious, severe, administering all things well and faithfully in the school entrusted to you together with your colleague. This I have often declared, even while I am here, to many; and I fear I may sometimes have made you blush. Therefore I shall now spare you and praise you only in this: that besides that weighty office of governing the young, you also took upon yourself the task of cultivating talents which, without your care and kindness, would not have risen. With you there was, when occasionally I came to visit you both, a young Verden-born student, Johannes Potinius. As he was serving you in your house, I saw how he was learning both languages, and since he was in advance of the other pupils of your discipline, that he was even learning Homer under you. Some years later you sent the young man, along with my eldest son—whom I likewise had entrusted to your literary instruction—to the Academy of Rostock. I brought Potinius, together with his family, to the Academy of Helmstedt. Among us he was at first honored with a position, with the interpretation of the Greek language entrusted to him. After some interval he was also publicly charged with teaching the art of rhetoric, and privately he offered instruction in Hebrew as well. But a pestilential contagion, in the month of June of the previous year, snatched this foremost teacher from our youth. Yet this Potinius has been honored by others, and in his proper place he will be honored by me as well—along with many others among the pupils formed by your discipline. For you have sent to us at the academy many young men—modest, with well-trained talents, imbued with sound and necessary rudiments. This very

point I have often proclaimed to others; but here I wished to thank you—that you have kindly supported, even from the beginning, those of slender means, or those abandoned by others, by your resources also; so that they recognized in you not merely a teacher, but a second father, and praised you especially in my presence. Among these is Barthold Nihusius from that region, to whom, when he was sent to you, you showed favor on account of his probity—first you, and next your colleague Kitus (a man likewise most learned, and your rival in all things, especially in that part of discipline). Had you not been present, Detlev, he would have been carried off—wherever fortune might have borne him—from the gardens of the Muses, or even from the very temple of Minerva; but you, having discerned him to be a youth of good natural disposition toward virtue, kept him with you. Nor ought he to have perished, whom the Father of wisdom willed to be preserved for the public good through you as the first instrument. That same giver of spiritual goods then brought him safely into the academic harbor to another man of our own talent, Cornelius Martini, who desired to do good no less than he knew how to teach well. Thus this pupil of yours, advancing with greater strides under the same patron and teacher, both in duty—which is the cultivation of virtue—and in many parts of wisdom, could not, nor ought he to, remain hidden. For your bishop, who is also bishop of Osnabrück, Philip Sigismund, Duke of Brunswick and Lüneburg, when he had heard of the young man, took him generously into his favor—a most religious and magnificent prince, from whom that school also may surely expect very much, and will receive a great benefit. Your young man is not neglected here today; the good—on account of reasons I have mentioned—love him, and his peers especially, to whom he is himself an example in this admirable study of physics. About to take up a place in our faculty from the next vacancy, he has sent these theses to you, who have deserved the best of him; and you will see that not all are ungrateful for benefits received, and that he, in this respect also, imitates you. For you remember—as I do—that once I had recognized you as a grateful man, I was accustomed to declare it; yet this virtue has been so rare in all ages and places that from it have arisen everywhere various complaints and sayings celebrated among the nations. For this reason the fact ought to be dearer to you, as a sure proof of your good spirit, that he is such; indeed, I scarcely doubt it. I also wish that you regard even this verbose letter with a favorable mind.

Farewell. From Helmstedt, out of the Academy of Julia, on the fourth day before the Ides of April (April 10), 1612.

1. From the previous disputation we learned that there are two principles of constitution in natural things—namely matter and form, which constitute that which we call a natural body.

2. Therefore we call a natural body that which comes to be by nature, and not by some other kind of cause—such as air, water, earth, fire, the parts of animals, and so forth. These things are what they are by nature. In this they differ from those things which are produced by art. For a bed or a garment, insofar as it is such, does not come from nature but from art, as is evident.

3. Now since the word nature signifies many things, in this discussion we call nature that which is the principle and cause of motion and rest in that in which it is primarily, of itself, and not by accident.

4. I say principle and cause in order to exclude those “principles” which are not causes, such as privation. I say of motion and rest, taking the word motion broadly, both for change in general and for motion strictly so called—thereby indicating that here I understand no principle or cause which is not a principle or cause of motion. For mathematical things, insofar as they are such, have their own principle and cause, but not of motion.

5. Therefore, whatever things possess such a principle of motion and rest, manifestly have nature—a fact which cannot apply to any genus of being other than corporeal substance. This, we think, is what Aristotle intends to suggest in these words, when in text 4 he says: “For nature is always a certain subject, and is in a subject.”

6. And so, according to nature, things are said to be not only those which we defined above, but also all those things which come to be on account of that nature—as, for example, the upward motion of light bodies and the downward motion of heavy ones.

7. But since a natural body, as has been said, consists of matter and form, Aristotle asks which of these—matter or form—is nature. Thus some determined that matter is properly nature, and thought they could prove this by the example of a buried litter or some similar artifact. For, they said, if the litter were buried in the ground and sprouted, it would not bring forth a litter by nature, but wood—of which it was the matter.

8. Therefore they judged that what belonged to the thing from art was accidental, while that which remained was its essence, as that which ought to be permanent.

9. And they then transferred a similar reasoning to natural things as well. For just as the form of a statue stands to the wood, so they thought the form of gold stands to water, or of bone to earth. For this reason they considered such things to be the nature and essence of things.

10. And this was the reason why they diverged into various positions: some held earth to be nature, others fire, some air, many water—and not even in the same manner; for among them were those who posited only one, others who posited several of these; and finally, the rest judged all these together to fall under the name of nature. Whatever, moreover, appeared in bodies besides these, they held to be only certain effects of them—habits or dispositions.

11. Aristotle, however, very rightly asserts that both matter and form are nature—yet in such a way that the more important part is assigned to form.

12. Matter indeed pertains to nature, because just as in artificial things that which underlies is called matter and is termed nature, so also in natural things—since this alone remains throughout the transition of forms, and without it no change, indeed no motion at all, could exist. This consideration moved the ancients to deem matter alone worthy of the name nature.

13. But that form likewise pertains to nature—and indeed more than matter—is indicated by the fact that, just as in artificial things it gives artificial being, so in natural things it gives natural being. Next, because we say that each thing is, when it has attained its act; and in natural things that act is the form, or proceeds from the form. For a man is not a man because of matter or of potency with a view to becoming a man, but because of the form united to that matter. Finally, generation is the path to nature, and that path is to form. Therefore form will be nature more than matter.

14. Here Aristotle notes that form and nature are taken in two ways, since privation also is, in a certain manner, a form.

15. Thus the composite, which is constituted, will not itself be nature, but from nature.

16. But since the mathematician also concerns himself with body, the question can arise whether the mathematical treatment is the same as the physical one. To this we briefly answer: the mathematician indeed deals with body, but differs from the physicist in the manner of considering it. For the physicist defines all things *ek antitheseōs*, that is, by the apposition of his subject; whereas the mathematician considers all things *ek adiaireseōs*, that is, abstractly.

17. Yet mathematics does not present something false, because the abstraction corresponds to something that truly exists outside the mind. For its definitions—when, for example, it defines a line, a surface, or a body—are such that they make no mention of a subject or of motion; and for this reason are said to abstract from these, though only mentally. For in reality they are in a body and cannot subsist outside it.

18. But natural definitions are not made without the apposition of matter, and thus they stand in relation to mathematical ones just as the definition of the “snub” (the turned-up shape) stands to the definition of the “curved.” For snubness cannot be defined by the physicist without the apposition of its subject—namely, the nose; whereas the mathematician can, and ought to, define not indeed snubness, but a curved line, without the apposition of a subject.

19. The astronomer likewise, although he too is occupied with motion, is not concerned with it insofar as it arises from the principles or nature of the heavens. Still less does he contemplate the nature of the heavens. Rather, he explains the equalities and inequalities of celestial motion, the proportions of times, the risings and settings of the stars, and other things of this sort.

20. It is therefore evident, as appears from what has been said, that nature is the principle and cause of motion. But how this causal power of nature is to be understood is not easy to perceive either here or in the remaining parts of physics, unless the distinction of causes is well grasped—especially since it has been much disputed whether motion arises here casually or by chance, or rather naturally for the sake of something, or else in some other manner. And this

cannot at all be understood unless the doctrine of causes is known precisely, so far as it is of service to the present treatise. Aristotle therefore here treats of causes for this end.

21. What a cause is is known from the effect of which it is the cause. Four of these—whether genera or species—are enumerated: matter, form, efficient cause, and final cause. We shall briefly run through them.

22. Matter is that from which something comes to be, in such a way that it inheres.

23. Form is the very whatness of the thing, or that which gives being to the thing.

24. The efficient cause is the first principle of change.

25. The end (or final cause) is that for the sake of which a thing exists.

26. Causes may be of one and the same kind, or of many and different kinds; further, they may be causes *per se* or *per accidens*; third, they may be proximate or remote; fourth, they may be in act or in potency. Effects bear the same relations to these, all of which Aristotle treats at length.

27. Moreover, since some have wished to ascribe the vicissitudes of things to fortune and chance, the physicist must not be ignorant of what fortune is and what chance is; for you labor fruitlessly in physics if you do not know this.

28. That fortune and chance occur cannot be denied by one who understands that in things done for the sake of an end, an effect often arises *per accidens*—whether through choice or, without choice, by nature, which nonetheless acts for the sake of an end. Therefore fortune and chance are posited among accidental causes.

29. For since things that occur do so by their causes, whether by choice or without it, and since they both occur and do not occur *per se*, it is certainly necessary that such effects be given and that they be given not *per se*: and therefore the same judgment must in every respect be made concerning the causes.

30. Fortune, therefore, is a cause *per accidens*, of those things which happen for the sake of something by choice.

31. I say cause, because that from which such an event arises philosophers call fortune; I add *per accidens*, because it is not from them that it occurs perpetually or for the most part, but from casual causes; I add by choice, because fortune properly belongs to that.

32. I call chance that which likewise occurs in things done for some end, but without choice, and from such a cause rarely occurs—for example, in the generation of monsters; likewise in all those things which happen by nature, or more properly happen by nature, but do not happen for that end.

33. Hence it is also clear what we mean when we say that something happens in vain: namely, when it does not achieve its end.

34. But lest anyone here misunderstand the text of Aristotle, it must be known that chance is taken in two ways: in one narrow sense, insofar as it is opposed to fortune; in this sense, it is not fortune, nor indeed is it chance as Aristotle defines it.

35. Or it is taken broadly, when it even includes fortune. And thus Aristotle says (*Physics* 2.7) that that which happens by fortune is chance as well, but that which happens by chance is

not by fortune. In this broad sense, therefore, chance will be defined as a cause *per accidens* in those things which happen for the sake of something.

36. Aristotle therefore places fortune and chance in the genus of efficient causes, of those things which happen either by mind or by nature.

37. Moreover, the remarkable passage here must be carefully noted, for it beautifully refutes those who thought that all chance things are governed by Providence; but we shall assign the words themselves.

38. For when, says the philosopher, of those things whose cause can be either mind or nature, chance and fortune are causes—then, indeed, when something happens *per accidens*, that which happens *per accidens* is preceded by that which happens *per se*, and therefore that which is due to an accidental cause is posterior to that which is *per se*: chance and fortune, in fact, will be posterior to mind and nature. Hence if any such cause is called chance, mind and nature, together with the many other causes, must be prior to it as the universal cause.

39. For these and many other points, the philosopher differs concerning causes; hence he treats of them so carefully in physics.

40. But first he shows that there are no more—nor indeed fewer—than four causes, since in answering the question why, one cannot respond by more than four modes.

41. Not, however, as mathematics is concerned with form, or ethics and politics with the end: physics also considers one or two causes; yet all four are needed, and therefore it is necessary to consider them more precisely.

42. For often, as the philosopher shows, these four causes reduce to three for us, when form and end are one, as in the generation of man. For the end which nature intends is the same as the generated form; and in univocal generation, that from which motion originates—that is, the efficient cause—is of the same species as the generated thing: for man generates a man.

43. But because the ancients wished, even if reluctantly, to see causes as necessary, they did not, however, escape the necessity. Aristotle examines the question: does nature act for an end? Briefly, we affirm this positively with Aristotle. For otherwise every natural action would be accidental, which is manifestly not the case: it tends always to the same end and arrives there, unless hindered. Therefore it acts necessarily for an end. Add that whatever happens or is made, is made for the sake of something, as in artificial works: for if those things which are produced could be imitated by art, things would otherwise come to be than as they are. But if nature could effect these things by the work of art, it would leave us a clock, a painting, or a constructed ship other than what we now have by skill. Finally, the bee, the swallow, the ant act for an end; the seeds and flowers are born for an end. All these things, then, are by nature, and it is manifest that they act for an end, by nature.

44. This appears in all cases, as if things act naturally: the elements in a mixture come together toward their end, namely, generation; therefore they also concur in due proportion, lest, without their end, they fail to achieve it.

45. Therefore, to conclude in the philosopher's words: if both nature and the will of some agent cause the swallow to make a nest, the spider to weave its web, the plant to produce leaves

and fruit, and the roots to send forth nourishment not vainly but for an end, it is evident that such a cause exists in these things by which they come to be and persist.

46. And since nature is twofold—one indeed as matter, the other as form, which is the same as the end—other things, however, exist for the sake of this; therefore this will be the cause for the sake of which.

47. The same principle is illustrated by the example of error or defect in art and in nature. For in the arts, when we act for some end, if we achieve what we intended, all consider it done rightly. But if we fail, they say we have erred. Likewise, if nature produces a fetus perfectly formed in all its parts, we judge the work of nature good; but if a monster is born, we judge that nature has erred, because it did not reach its end—the fetus, perfect in all its parts.

48. This is a most beautiful consideration: for while the end must be foreknown, foreknowledge exists only in a knowing power; nature, however, does not know, since its operations are determined only toward other things, whether they are necessarily effected or not. Therefore there is a highest and first intellect, from which all things have, by their nature, their end and their inclination toward the end.

49. Thus far. The philosopher does not remove all necessity from natural things, but he concedes it in a hypothetical sense, when, from things that have occurred, we judge concerning those which preceded them. For example, if we see blood in an animal, and we know that it comes from chyle, and the chyle from digested food, we conclude necessarily.

50. There are here two kinds of necessity: one from matter, the other from the end. We have already said that the end concurs with form in physics. The ancients seemed to regard only the necessity from matter, neglecting the fruitful and more important necessity from the end. For example, when you build a house, it is not necessary that you use bricks, lime, wood, or other things pertaining to matter; yet these are not the true and proximate cause of the house (unless in their own kind, which accomplishes nothing) but the end—that is, that something be contained in it or that it be inhabited. Therefore the house is made: matter is indeed necessary, but it is not the house; the house is because it is inhabited. Likewise, a man is indeed flesh, bone, cartilage, tendons, etc., but he is not a man because of these, but because of the end, namely, his form; therefore it occupies the principal place in definition.