

# The Medical Background and Inductive Basis of Aristotle's Doctrine of the Mean

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## Introduction

Two arguments in *Eudemian Ethics* 2 that are crucial to Aristotle's definition of moral virtue as a mean state<sup>1</sup> contain claims that Aristotle says are clear by induction.<sup>2</sup> In these contexts, he explicitly appeals to examples coming from arts and sciences like gymnastic training and medicine for evidence. But Aristotle does not here, or elsewhere (at least in any extant work), including the parallel arguments in the *Nicomachean Ethics*, actually supply or discuss the evidence that makes these inductive arguments clear. Fortunately, strong support for them can be found in the Hippocratic Corpus, especially in *On Ancient Medicine* and *On Regimen*.

Discussions of Aristotle's definition of virtue and doctrine of the mean typically suffer from one or more of the following interpretive deficiencies. First, many influential studies focus exclusively on *Nicomachean Ethics* 2, and either ignore or pay little attention to the parallel *Eudemian Ethics* 2 arguments.<sup>3</sup> Second, and partly as a result, many studies ignore the inductive form of the arguments as Aristotle explicitly describes them in the *Eudemian Ethics*. Third, and again partly because of the foregoing, most commentators ignore or downplay the medical background which, in my interpretation, forms almost the

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- 1 "Virtue of character is essentially a mean state in each case, and concerns certain means (τὴν ἡθικὴν ἀρετὴν καὶ αὐτὴν ἐκάστην μεσότητα εἶναι καὶ περὶ μέσ' ἄττα) in pleasures and pains, and things pleasant and unpleasant" (*Eth. Eud.* 2.5, 1222a10–12, trans. Woods, following Woods' proposed reading of the text noted on p. 190). (Unless otherwise noted, translations are mine and the *Eth. Eud.* text follows Susemihl.) See also the definition at *Eth. Nic.* 2.6, 1106b36–1107a2, discussed below in part 4.
  - 2 ταῦτα δὲ δῆλα ἐκ τῆς ἐπαγωγῆς (*Eth. Eud.* 2.1, 1220a28–29); καὶ τοῦτο δῆλον διὰ τῆς ἐπαγωγῆς καὶ τοῦ λόγου (*Eth. Eud.* 2.3, 1220b29–30).
  - 3 For example, the influential account of Urmson (1973) (reprinted in 1980 and recapitulated in 1988) ignores the *Eth. Eud.* Urmson was criticized in Hursthouse (1980) and (2006), where the *Eth. Eud.* is only very briefly mentioned.

entire basis of the arguments. For example, Hursthouse acknowledges that “intimations of the doctrine of the mean—in literature, medicine, mathematics, and philosophy—seem to have been around well before Aristotle, but, for the purposes of this chapter, I will go no further back than Plato.”<sup>4</sup> Nevertheless, recognizing the existence of this background and that the doctrine “is not peculiar to the ethical works” (she mentions the presence of the doctrine in several of Aristotle’s theoretical works, especially biological ones), she considers that “the principle of charity does not apply to it in the same way”, and we are entitled to assess the doctrine of the mean “on its own merits”. Unfortunately, when she does: “it stands revealed as, to be blunt, simply whacky, emphatically not ‘a principle worthy of his genius’ ... but a bit of completely misguided science-cum-metaphysics that appears to have been generally accepted in his day”.<sup>5</sup> Although Hursthouse is extreme in her belittlement of both the scientific background of the doctrine and Aristotle’s adaptation of it in his ethics, she is certainly not alone in failing to appreciate the full significance of the medical background.

Fortunately, Rapp has since made progress in interpreting the doctrine in a way that avoids the problems discussed by Hursthouse. He also pays close attention to both the *Eudemian* and *Nicomachean Ethics*. He shows that the doctrine was never intended as any kind of “practical guideline” (or “decision procedure” or “action-guiding rule”), but rather as a conceptual tool for clarifying the conditions under which the non-rational soul can be said to be in a good condition in the context of specific actions.<sup>6</sup> Unfortunately, Rapp does not discuss the inductive form of the arguments or their medical background and so his interpretation, while essentially correct, could still be strengthened.

I propose to remedy these deficiencies as follows. First, I will begin with the *Eudemian Ethics* and the context of the inductive arguments found in 2.1 and 2.3 (in parts 1 and 2). I will only briefly discuss the more familiar *Nicomachean* arguments because I perceive them to be later reuses and refinements of the *Eudemian* ones. Second, I will interpret these arguments in a syllogistic form

4 Hursthouse (2006) 96.

5 Hursthouse (2006) 99.

6 “The doctrine of the mean does not attempt to determine the individual parameters by a quantitative account of what is good or bad, but it clarifies the conditions under which the impulses of our non-rational soul and the corresponding actions can be said to be good or right. And this is exactly what the context of the doctrine in *Eth. Eud.* 2 and *Eth. Nic.* 2 requires.” Rapp (2006) 126. Rapp’s account has recently been approved of and built upon by Brown (2014), see, e.g., *ibid.* 67 n. 5.

consistent with Aristotle's logic, and I will try to reconstruct their inductive form. Third, I will build on earlier work that has already demonstrated the importance of the medical background for Aristotle's philosophy in general and ethics specifically<sup>7</sup> by looking at some passages in *On Ancient Medicine* and *On Regimen* (in parts 3 and 4).

### 1 Eudemian Ethics 2.1

In *Eth. Eud.* 1, Aristotle discusses *eudaimonia* and in 2.1 arrives at and confirms his definition: “the activity of a complete life in accordance with complete virtue” (1219a38–40). The next step is to explain what is meant by “complete virtue”. This explanation, he says, requires discussion of the parts of the soul, “for virtue belongs to the soul and necessarily so” (1219b26). After eliminating the vegetative part from the discussion, he focuses on the two parts of the soul that have reason: one partaking of reason by “its natural tendency to command”, and the other by “its natural tendency to obey and listen” (1219b30). Human beings, and only human beings, have both parts, “for if a part belongs to a human being qua human being, it necessarily includes reasoning and a ruler and action (λογισμὸν ἐνεῖναι καὶ ἀρχὴν καὶ πράξιν), but reasoning rules (ἄρχει) not reasoning, but desires and passions (ὀρέξεως καὶ παθημάτων), so that it is necessary to have these parts” (1219b40–1220a2). Then, by an analogy to the good physical condition of the body, “complete virtue” will mean the virtue of both of these parts of the soul: “Just as the good physical condition (ἡ εὐεξία) is composed out of the virtues of the parts, so too is the virtue of the soul insofar as it is complete” (1220a2–4). Two kinds of virtue correspond to these two parts of the soul: intellectual virtue to “that rational part which commands the soul by its possession of reason”; and moral virtue to “the part which is irrational but by nature follows the part having reason” (1220a9–11). This distinction between two parts of the soul and their virtues then structures the ensuing discussion of moral virtues in books 2–4, followed by the intellectual ones in 5.

7 Most studies of the influence of medicine on Aristotle have understandably focused on theoretical philosophy, for example Solmsen (1960), Lloyd (1966), Longrigg (1993), van der Eijk (2005), Johnson (2012), Bartoš (2015), Morel (2024), and several authors in this volume. For practical philosophy specifically, see Wehrli (1951), Jaeger (1957), Lloyd (1968) (and Lloyd 2003, 181–185), Tracy (1969), Hutchinson (1988), and in this volume, Thein, Morel, and Thumiger. Tracy's extensive discussion of how Aristotle's doctrine of the mean is informed by the medical background of his own theoretical (especially physiological) views (1969, 222–282) is mostly a summary of Aristotle's position and does not discuss the exact form of Aristotle's argument or its relationship to specific medical texts.

Aristotle says that we must first investigate what moral virtue is (and what its parts are), as well as what produces it (*Eth. Eud.* 2.1, 1220a13–15). But before doing so, he offers a brief methodological reflection: “we must make our search with some grasp of the matter, as all who seek in other areas do, so as to try, by working through what is expressed truly but unclearly, to arrive at what is both true and clear” (1220a15–18). Aristotle thus takes his lead from a method already employed in other areas. What those areas are will become clear, but Aristotle offers a hint: “As things are, we are in a state comparable to knowing that health is the best disposition of the body” (ὕγιειαν ... ἢ ἀρίστην διάθεσιν τοῦ σώματος, 1220a18–19). Knowing only this, one would not know what health is, but knowing this could nevertheless be helpful to conceptualizing both what health is and how to produce it. Similarly, knowing that virtue is the best disposition of the soul does not afford us knowledge of what virtue is, but it will prove helpful to conceptualizing how it is produced, and what it is. Aristotle begins by discussing how virtue is produced.

⟨1⟩ First of all, let it be established that the best dispositions are produced by means of the best things, and to act best concerning each thing is produced from the virtue of each thing. For example, *the best exercises and nourishment are produced from a good physical condition, and out of the good physical condition they exercise best*. Further, every disposition is produced and destroyed by the same things being applied one way or another, *such as health by food, exercise, and season or climate. This is clear by induction*. ⟨2⟩ And the virtue, therefore, is this kind of disposition, a disposition which is produced by the best processes concerning the soul, and a disposition from which the best deeds and passions of the soul are accomplished; and by the same things, if they happen in one way, it is produced, but if they happen in another, it is destroyed, and the use of virtue is related to the same things by which it is increased and destroyed, in relation to which it disposes us towards the best things. ⟨3⟩ An indication of this is that both virtue and vice are concerned with the pleasant and the painful. For their punishments *being medical treatments* and being produced through opposites, are produced through opposites just as those others are. That moral virtue concerns the pleasant and the painful, then, is clear. (1220a22–39).

It is highly significant that at the outset of his discussion of moral virtue, Aristotle presents a general account of the formation of dispositions by reference to medicine in section ⟨1⟩, and then confirms the results of his inference by appeal to a different point about medicine in ⟨3⟩. In ⟨1⟩ he mentions

three examples: “nutrition”, “exercise”, and “season” (ὥσπερ ὑγίεια ὑπὸ τροφῆς καὶ πόνων καὶ ὥρας). Each of these factors are extensively discussed and in fact emphasized by medical writers.<sup>8</sup> In his commentary, Woods says that what is clear by induction relates to the “empirical thesis” that “every state (disposition) is both produced and destroyed by the application, in a certain way, of the same things”.<sup>9</sup> Woods says that the examples mentioned above are supposed to support that thesis: “just as the right sort of food promotes, so the wrong sort ruins, health, and similarly with exercise”.<sup>10</sup> As a further indication that this is a “substantial thesis”, Woods points to another set of examples offered in support of the same claim in *Eth. Nic.* 2, at 1103b6–25 and 1104a11–27.

But when Aristotle says “this is clear by induction”, he presumably means more than that telegraphic examples can be given in support (i.e., τροφῆς καὶ πόνων καὶ ὥρας). According to *Prior Analytics* 2.23, “induction consists in deducing a relation between one extreme and the middle by means of the other extreme, e.g. if B is the middle term between A and C, it consists in proving through C that A belongs to B. For this is the manner in which we make inductions” (68b15–17, trans. Jenkinson). Accordingly, in what follows, I attempt to reconstruct as syllogisms both Aristotle’s overall deductive argument and the inductive argument that is supposed to make its major premise clear.

The conclusion comes at the beginning of section <2>: “virtue, therefore (ἀρετή), is this kind of disposition” (1220a29). I interpret the argument as follows.

4. The best disposition inheres in doing the best things. (1220a22–23)
5. Doing the best things inheres in the virtue. (1220a23–24)
6. Thus, the best disposition inheres in the virtue. (1220a29)

I have numbered the propositions in this way because another argument (the inductive argument discussed below) needs to be supplied in support of the

8 The author of *On Regimen* 1.2 discusses the importance of determining correctly “the proportion of exercise to bulk of food, to the nature of the individual, to the age of the body (τὰς ἡλικίας τῶν σωμάτων), to the season of the year (τὰς ὥρας τοῦ ἐνιαυτοῦ), to the changes of the winds, to local conditions, and to the constitution of the year.” (VI.470. L. = 124,11–14 Joly-Byl, trans. Jones, discussed below). See also *Nature of Man* 9 (VI.54. L. = 190,16–192,5). Woods (1982, 97) is mistaken when he translates ὥρας not as “season” but as “time of life” and remarks: “the example of time of life (*hōra*) is rather strange: it is not something that can be applied either in a beneficial or a deleterious way.”

9 Woods (1982) 97.

10 Woods (1982) 97.

major premise, proposition 4. Now, if the conclusion at 6 is secured, then Aristotle has deduced that “the virtue is this kind of disposition” (καὶ ἡ ἀρετὴ ἄρα ἡ τοιαύτη διάθεσις ἐστίν, 1220a29), i.e., the best disposition, the disposition “which is produced by means of the best movements of the soul” (ἡ γίνεταί τε ὑπὸ τῶν ἀρίστων περι ψυχῆν κινήσεων, 1220a29–30) and “from which the best deeds and passions of the soul are produced” (καὶ ἀφ’ ἧς πράττεται τὰ ἀρίστα τῆς ψυχῆς ἔργα καὶ πάθη, 1220a30–31).

Whether the conclusion is secured depends on whether the major premise is acceptable. In order to see that it is, we must examine its inductive basis, which may be interpreted as follows:

1. The best disposition (ἡ βελτίστη διάθεσις) inheres in the good condition (ἡ ὑεξία).
2. The best application of the same things (e.g., exercise and nutrition) inheres in the good condition. (1220a24–25)
3. The good condition inheres in the best application of the same things (e.g., exercise and nutrition). (1220a25–26)
4. Thus, the best disposition inheres in the best application of the same things. (1220a26–27; cf. a22–23).

This conclusion is stated with positive superlative valences (the *best* disposition inheres in the *best* application of the same things, etc.) corresponding both to Aristotle’s examples and to the proposition that he is trying to support. However, Aristotle clearly intends that supplying opposite valences would produce opposite results (so the *worst* disposition inheres in the *worst* application of the same things, etc.). Thus, he expresses the conclusion generally: “Every disposition is produced and destroyed by the same things being applied *in a certain way*” (πάσαν διάθεσιν ὑπὸ τῶν αὐτῶν γίγνεσθαι καὶ φθεῖρεσθαι πῶς προσφερομένων, 1220a26–27). But the application of this general principle to the *best* disposition and *best* things allows him to reach as an interim conclusion the major premise (number 4 above) of the overall argument: that “the best disposition inheres in doing the best things”, assuming that “the best application of the same things” is equivalent to “doing the best things”. Certainly “the best application of the same things”, as we have just seen, results in doing the best things. Thus, with this conclusion at 4 secured, Aristotle can reach the conclusion at 6, that every virtue is a disposition “of a certain kind”.

The inductive argument involves the convertibility of the terms “the best application of the same things” and “the best condition” in premises 2 and 3. These terms are argued to be convertible on the basis of a medical doctrine: “the best exercises and nutrition are those from which are produced the good physical condition” (οἶον πόνοι τε ἀριστοι καὶ τροφή ἀφ’ ὧν γίνεταί εὐεξία, 1220a24–

25) and “from their good physical condition they exercise best” (ἀπὸ τῆς εὐεξίας πονοῦσιν ἄριστα, 1220a25–26). Thus, the entire inductive basis for the overall argument in the *Eth. Eud.* is this medical doctrine.<sup>11</sup> Here is what Aristotle says in the parallel argument in the *Eth. Nic.*:<sup>12</sup>

First, then, let us consider this, that it is the nature of such things <sc. virtues> to be destroyed by deficiency and excess, as we see in the case of strength and health (for to gain light on things imperceptible we must use the evidence of sensible things); both excessive and deficient exercise destroys the strength, and similarly drink or food which is above or below a certain amount destroys the health, while that which is proportionate (σύμμετρα) both produces and increases and preserves it. So too it is, then, in the case of temperance and courage and the other virtues. (2.2, 1104a11–19, trans. Ross)

The examples of “strength and health”, which are produced, increased, and preserved by proportionate but destroyed by excessive or deficient food and exercise, underwrite the principle that the moral virtues are produced, increased, and preserved by some kind of proportion avoiding excess and deficiency. So here too, the account of virtue depends on medical doctrine.

Returning to the *Eth. Eud.* passage, in section <2>, Aristotle applies the general principle based on medicine to moral virtue, and then confirms this application by invoking yet another medical analogy in <3> between punishments and medical treatments (αἱ γὰρ κολάσεις ἰατρεῖαι οἶσαι). Medical treatments and punishments both operate through application of opposites, that is, application of the quality opposite to the quality causing the bad condition. So, for example, if repletion or insufficient exercise is causing the bad condition of the body, a restricted diet or intensive exercise should be prescribed;<sup>13</sup> similarly, if

11 The “good condition” is defined in the *Precepts* 9 in terms of “movement”: “the healthy condition of a human being (Ἡ τοῦ ἀνθρώπου εὐεξία) is a nature that has naturally attained a movement (κίνησιν), not alien but perfectly adapted, having produced it by means of breath, warmth, and concoction of humors, in every way, by complete regimen and everything combined, unless there should be some congenital deficiency (ἔλλειμμα).” (1x.266 L. = 33, 25–29 Heiberg, trans. Jones).

12 See also *Eth. Nic.* 2.1, 1103b6–12, where Aristotle makes a similar argument on the basis of flute-playing and building.

13 In *On the Nature of Man* (*Nat. Hom.* 9 /VI.54 L. = 189,3–10 Jouanna, trans. Jones): “diseases of repletion are cured by evacuation, and those due to evacuation are cured by repletion; those due to exercise are cured by rest, and those due to illness are cured by exercise. To know the whole matter, the physician must set himself opposite to the established char-

too much pleasure is taken in drink or food or sex, restrictions on these should be imposed for the sake of moral virtue.

Moral virtue, virtue of character, Aristotle says, is produced by habit. The very name “character” (ἦθος) indicates something that grows “from habit” (ἀπὸ ἔθους). When habituated (ἐθίζεταί), one is led by a non-innate source to an efficacious or capable state “by being moved repeatedly *in a certain way*” (τῷ πολλακις κινεῖσθαι πῶς, 1220b1–2). As in the foregoing, although the principle is stated generally, we may substitute the superlative valence to see how this applies to virtue: one is habituated to the *best* condition by being moved repeatedly in the *best* way. Regarding character itself, it is said to be a certain quality of that part of the soul that is capable of following reason (1220b5–6). We have seen that this part is the desiderative or sensitive soul, the part which experiences the passions, in which there is pleasure and pain. Aristotle next examines “what it is in accordance with which the soul has a character of a certain quality” (κατὰ τί τῆς ψυχῆς ποιότης τὰ ἦθη). Aristotle gives two answers: “in accordance with the capabilities of the passions, in virtue of which people are said to be subject to the passions” and “in accordance with their habits, in virtue of which people are said, with respect to these passions, either to experience them in a certain way, or to be immune to them” (1220b7–10). Character and virtue will certainly be related to the passions and our capabilities for them, as we have seen; they include anger, fear, appetite, and “in general whatever, as such, usually gives rise to perceived pleasure or pain” (ὅλως οἷς ἔπεται ὡς ἐπὶ τὸ πολὺ ἢ αἰσθητικῇ ἡδονῇ ἢ λύπῃ καθ’ αὐτά, 1220b13–14). But he says that “habits are what are responsible for whether these occur in accordance with reason, or the reverse” (1220b18–19). And, for this reason, habit is the genus of both virtue and vice.<sup>14</sup>

The next step will be to determine the specific difference of virtue, which will allow Aristotle to offer a general definition of virtue according to its genus

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acter of diseases, of constitutions, of seasons, and of ages; he must relax what is tense and make what is tense relaxed. For in this way the diseased part would rest most, and this, in my opinion, constitutes treatment.” Cf. *Nat. Hom.* 2 (11.36 L. = 169,9–170,1 Jouanna). See Wehrli (1951) 53–54.

- 14 According to Jaeger (referring to the parallel passage in the *Eth. Nic.*), in calling moral virtue a “*hexis*”, Aristotle was adapting medical terminology: “to attempt a definition of virtue ... we must determine its genus, and this will not be difficult after we have compared the moral virtues with those of the body such as strength, health, etc. These are called a permanent disposition of the body (ἕξις) in medical terminology, and Aristotle does not hesitate to apply the same word to the ethical phenomenon of virtue”. Jaeger (1957) 58.



(habit) and specific difference (a mean state avoiding excess and deficiency). The account of this specific difference is where the second inductive argument about virtue appears.

## 2 Eudemian Ethics 2.3

A complete argument showing that virtue is a mean state appears in *Eth. Eud.* 2.3. I have divided the argument into three sections for ease of reference.

⟨1⟩ One must grasp that in everything continuous and divisible there is excess and deficiency and mean (ὑπεροχή και ἔλλειψις και μέσον). And these either in relation to others or in relation to us, *for example in gymnastic training, in medicine, in building, in piloting, and in any action whatsoever, both scientific and unscientific, and skilled and unskilled.* For motion (ἡ κίνησις) is continuous, and action (ἡ πράξις) is a motion. ⟨2a⟩ And in every case the mean in relation to us is best. For this is as science and reason prescribe (ὡς ἡ ἐπιστήμη κελεύει και ὁ λόγος). And in every case, this is and produces the best condition (τὴν βελτίστην ἔξιν); and *this is clear through induction and argument.* ⟨2b⟩ For opposites destroy one another. But the extremes are opposites both to each other and to the mean. For the mean is an extreme to each extreme, for example the equal is more than the less, but less than the more. Therefore, it is necessary that moral virtue concerns a mean and is a mean state. (περὶ μέσ' ἅττα εἶναι και μεσότητά τινά). (1220b21–35)

In section ⟨1⟩, Aristotle argues deductively that excess, deficiency, and mean inhere in every action. In ⟨2a⟩, Aristotle argues inductively to the interim conclusion that the mean in relation to us is the best condition for us. In ⟨2b⟩, Aristotle argues deductively from this interim conclusion to the overall conclusion that every virtue concerns (or is) a mean. Here is a syllogistic interpretation of section ⟨1⟩:

1. Excess, deficiency, and mean inheres in every divisible continuum.
2. A divisible continuum inheres in every motion.
3. Motion inheres in every action.
4. Therefore, excess, deficiency, and mean inheres in every action.

The first premise has the appearance of a mathematical axiom. However, as stated, it is overly brief because it is plainly false that every continuum contains excess, deficiency, and mean. A random line of arbitrary length is continuous and divisible, but does not contain excess, deficiency, or mean. What it does contain as a divisible continuum is “more”, “less”, and the “equal”, terms which are mentioned immediately below in section ⟨2b⟩. That everything con-

tinuous and divisible admits of “more, less, and equal” involves a mathematical principle also applied by Aristotle in his physics. Everything continuous can be divided into subdivisions that are themselves always divisible: the continuous is infinitely divisible.<sup>15</sup> It is always possible to take “more”, “less”, and “equal” amounts of a divisible quantity. Thus, every divisible continuum contains more, less, and equal, but some continua can be taken not only “in relation to others” but also “in relation to us”. “In relation to others”, only the abstract mathematical terms “more”, “less” and “equal” apply; but “in relation to us”, these terms correspond to “excess”, “deficiency”, and “mean”. Ethics is concerned exclusively with this second class of continua.

The second premise, that every “movement” (*kinesis*) is continuous and divisible, is another principle employed in Aristotle’s physics. Every motion is divisible into sub-movements that are themselves always divisible. Thus, every movement is infinitely divisible and, insofar as it is a single motion, continuous.<sup>16</sup>

The third premise, that every action (*praxis*) is a movement (*kinesis*), is needed to explicitly link “excess, deficiency, and mean” to ethics.<sup>17</sup> Ethics, of course, is concerned not with “movements” generally (like physics), but specifically with movements that are “actions”, in which there can be too much or too little of something. By linking two abstract assumptions from his physics with the metaethical assumption that every “action” is a “movement”, Aristotle is able to draw the conclusion that in every action there is excess, deficiency, and mean.

But this deductive argument in section <1> only gets Aristotle so far. The mere existence of a mean in every action does not in fact come very close to showing what Aristotle wants to conclude into his definition of virtue, i.e., that every action should be concerned with a mean or aimed at a mean. To show that, Aristotle offers the inductive argument in <2a>, which I interpret syllogistically as follows:

1. A mean in relation to us inheres in every prescription of science and reason (e.g., those of gymnastic training, dietetics).

15 See *De caelo* 1.1: “a continuum is that which is divisible into parts always capable of subdivision” (268a6, trans. Stocks). That everything continuous is infinitely divisible is a point repeatedly made by Aristotle in *Physics* 6, e.g., 231b16; cf. 232b24, 233a25.

16 See *Ph.* 4.2, 210a10–13 and 5.4: “Since every movement is continuous (συνεχῆς πάντα κίνησις), a movement that is one in an unqualified sense must (since every movement is divisible) be continuous, and a continuous movement must be one” (228a20–22, trans. Hardie and Gaye, adapted).

17 See also 1222b28–29. For *pathê*, see *Eth. Nic* 1106a4–5.

2. The best condition for us inheres in every prescription of science and reason.
  3. The prescription of science and reason inheres in every best condition for us. (conversion of 2)
  4. Thus, a mean in relation to us inheres in every best condition for us. (1+3)
- Since Aristotle says that the conclusion (that “the mean is the best condition”: τὴν βελτίστην ἕξειν) “is clear through induction”, I have interpreted him in accordance with the syllogistic account of induction in *Prior Analytics*. Now, if premise 2 is convertible with premise 3, then an induction linking “the mean in relation to us” and “the best condition for us” would be possible. So, on this interpretation, the claim that “every prescription of science and reason is the best condition for us” and “every best condition for us is the prescription of science and reason” would have to be convertible. And that seems right: insofar as science and reason prescribe a condition for us, this must be the best condition for us, and insofar as something is the best condition for us, this must be what science and reason prescribe for us. This turns out to be the deep meaning of the very first claim that we examined, the one that comes in the methodological digression before Aristotle sets out to define moral virtue: virtue is the best condition of the soul, which Aristotle said was not yet a definition of virtue but would be useful in obtaining a definition. Its usefulness is that it shows a similarity with health, so that we can extrapolate from the methods of gymnastic training and medicine, arts that hold the authoritative account on the virtues of the body and, as we will see, are very much concerned with excesses, deficiencies, and means. Aristotle was not then offering an offhand remark before when he said that “as things are, we are in a state comparable to knowing that health is the best disposition of the body” (1220a18–19). He was explicitly following the same method as the arts of fitness and health.

Section <2b> has been interpreted as an independent argument leading to the conclusion that every moral virtue is a mean,<sup>18</sup> but I interpret it as an extension of the previous one. This is because the argument in <2a> says nothing whatsoever about virtue, but only reaches the conclusion that the mean in relation to us inheres in the best condition for us (i.e., proposition 4 above). A further argument is still needed to reach the overall conclusion about virtue, and this is what I see as the function of <2b>, which I interpret as follows:

4. Thus, a mean in relation to us inheres in every best condition for us. (1+3 above)
5. The best condition inheres in every opposite of deficiency and excess.

18 Woods (1982) 105, commenting on 1220b30–35.

6. The opposite of deficiency and excess inheres in every moral virtue.
7. Thus, the best condition for us inheres in every moral virtue. (5+6)
8. Therefore, a mean in relation to us inheres in every moral virtue. (4+7)

In support of my interpretation is the presence of the inferential particle γάρ (“for”) at 1220b30, where the idea that opposites destroy one another is offered as warrant for the claim that every moral virtue is the best condition for us (premise 7 above), not for the overall conclusion that every moral virtue is a mean in relation to us. But if it is possible to reach the overall conclusion from the argument in <2a> without the argumentation in <2b>, my main point will remain the same. The overall conclusion nevertheless depends entirely on the inductive argument given in <2a>, and specifically the claim that every prescription of science and reason (e.g., of gymnastic training and medicine) is a mean in relation to us.

I think this close reading of the relatively neglected *Eth. Eud.* passage can cast much needed light on the exactly parallel argument that appears in the same relative position in *Nicomachean Ethics* 2. In both arguments, Aristotle begins with an abstract mathematical principle, “in everything continuous and divisible ...” (ἐν ἅπαντι συνεχεῖ καὶ διαίρετῷ: *Eth. Eud.* 1220b21–22; *Eth. Nic.* 1106a26). Moreover, both arguments conclude with the definition of virtue: “thus it is necessary that ethical virtue concerns some middle and is a mean state” (ὥστ’ ἀνάγκη τὴν ἠθικὴν ἀρετὴν περὶ μέσ’ ἄττα εἶναι καὶ μεσότητα τινά: *Eth. Eud.* 1220b34–35); “therefore virtue is a mean state” (μεσότης τις ἄρα ἐστὶν ἡ ἀρετή: *Eth. Nic.* 1106b27–28).

Aristotle is clearer in *Eth. Nic.* 2.6 than he was in *Eth. Eud.* 2.3 in some respects. First, Aristotle is clearer that every divisible continuum contains “the more, the less, and the equal” (τὸ μὲν πλείον τὸ δ’ ἕλαττον τὸ δ’ ἴσον, 1106a27), and it is only continua taken in relation to us that contain “a mean of an excess and a deficiency” (μέσον τι ὑπερβολῆς καὶ ἐλλείψεως, 1106a28–29). Second, the terminology of the distinction between “in accordance with the thing itself or in relation to us” (ἢ κατ’ αὐτὸ τὸ πρᾶγμα ἢ πρὸς ἡμᾶς, 1106a27) is clearer than the distinction between “in relation to others or in relation to us” (ἢ πρὸς ἄλληλα ἢ πρὸς ἡμᾶς, *Eth. Eud.* 1220b23).<sup>19</sup> Third, in the *Eth. Nic.*, Aristotle elaborates on one of the examples mentioned in the *Eth. Eud.* in support of the inductive argument.

For example, if ten is many but two few, six takes the middle in accordance with the thing. For it exceeds and is exceeded by an equal amount.

19 Woods (1982) 103.

And this is a mean according to the arithmetic proportion. But this must not be taken as the mean in relation to us. For it is not the case that if for someone ten pounds is a lot and two is a little to eat, the gymnastic trainer will order six pounds. For this is perhaps a lot or a little for the one who is taking it; indeed, for Milo it is a little, but for the one who is just beginning gymnastic training it is a lot. (1106a33–1106b4)

The distinction between the mean relative to us, which is of concern to ethics, and the arithmetic mean, which is not, relates to the core methodological point that different degrees of precision apply in political discussions and mathematical proofs.<sup>20</sup> If we are looking for the arithmetic mean, we should expect the exactitude of mathematics and reject an answer such as “neither too much nor too little”. But the situation is different in ethics: the mean in action avoids taking too much or too little pleasure and pain with respect to the various objects it encounters in action, and it is difficult to say much more about it in general *precisely*. Of course, more may be said when specific objects and parameters are taken into consideration, and Aristotle does indeed say more about each specific virtue and vice in the ensuing discussion.

In the detailed example drawn from medical dietetics in the *Eth. Nic.*, which some commentators have considered “confusing”,<sup>21</sup> a comparison is made between Milo the experienced wrestler and an unnamed beginner. The issue is how much food to prescribe each given that ten pounds is too much and two too little. As Hippocratic medicine tells us, meats of different kinds and quantities are to be prescribed to experienced athletes and non-athletes.<sup>22</sup> The dietetic trainer must prescribe the correct *proportion* of food to exercise. It is not that Milo needs more meat than the beginner because he is more experienced, it is rather because he is engaged in more intensive (or numerous) exercises than the tyro. Similarly, the amount of pleasure (or pain) in the agent must be proportionate to the objects in their activity: the perfectly virtuous person will

20 The point introduced at *Eth. Nic.* 1.2, 1094b13–27 is reiterated at 2.2 with a pertinent comparison to medicine: “matters concerned with conduct and questions of what is good for us have no fixity, any more than matters of health. The general account being of this nature, the account of particular cases is yet more lacking in precision: for they do not fall under any art or set of precepts, but the agents themselves must in each case consider what is appropriate to the occasion, as happens also in the art of medicine” (1104a3–9, trans. Ross). See Jaeger (1957) 56.

21 Brown (2014) 71 n. 10.

22 For example: “pork is good for creating top condition (εὐεξίην) and strength in exercisers (πινέουσι) and gymnasts, but too strong for the sick or even normal person (ιδιώτησιν)” *Aff.* 52 (VI.263.15–17 L.= V.80.8–10 Loeb, trans. Potter, adapted).

neither experience too much nor too little pleasure (or pain) in any action, but rather the correct and proportionate amount.

How is the correct and proportionate amount determined? Aristotle says that “all of the sciences avoid the excessive and the deficient, while the mean is sought and this is chosen, though not the mean of the object but the mean in relation to us” (1106b5–7). He refers to “all sciences” (πάσα ἐπιστήμη, 1106b8), but he never names one. Various arts and sciences could be described as seeking the mean.<sup>23</sup> But the only science that Aristotle discusses is the one involving the correct allocation of food to an experienced athlete versus a beginner, that is, the dietetic aspect of gymnastic training. The inductive basis of the *Eth. Nic.* argument is thus narrower than in the *Eth. Eud.*, where Aristotle referred not only to gymnastic training and medicine but also to piloting. But if we are to focus the *Eth. Nic.* version, as so many commentators have, we must acknowledge that Aristotle is in even greater need of inductive support coming from medicine here than he was in the *Eth. Eud.*

The final thing that Aristotle makes clearer in the *Eth. Nic.* version is the set of parameters in action with respect to which the experience of a passion can be considered deficient, excessive, or in accordance with the mean, and thus virtuous or vicious. This discussion of parameters leads into the overall conclusion that moral virtue is a mean state.

I mean moral virtue. For this is concerned with passion and action, and in these there is excess and deficiency and the middle. For example, it is possible to feel fear and to feel confidence and to feel desire and to feel anger and generally to feel pleasure and to feel pain more and less, and in either case not well. But to do so when one should, and for what one should, and towards what one should and for the sake of what one should and generally as one should, is both a middle and also best, which is characteristic of the virtue. And in the same way also concerning the actions there is excess and deficiency and the mean. But virtue is concerned with passion and action in things which, on the one hand, the excess and deficiency miss the mark but, on the other hand, the mean is praised and succeeds. And these are both characteristics of virtue. Therefore virtue is a mean state, since it is skilled at hitting a mean. (1106b16–28)

23 Kalchreuter usefully collects relevant texts in epic, lyric, and drama, as well as in prose writers of various kinds, including Hippocrates (1911, 35–38). Welton and Polansky (1995) discuss some of these and also arts like music, sculpture, and painting.

Every moral virtue is concerned with hitting a mean and avoiding excess and deficiency in both passion and action, that is with feeling something (any passion, but in the final analysis pleasure and pain) in a certain amount in each action, each action being capable of specification by a complete set of relevant parameters for the purposes of moral analysis. For example, moral virtue involves not feeling a deficient or excessive amount of anger in response to a peevish student interrupting the beginning of a lecture with an impertinent question—there is an appropriate amount of anger to feel in this situation. And there is an appropriate amount to feel in response to an affable student asking a similar question during a lull in the question-and-answer period. And there are some students and questions towards which one should feel no anger whatsoever, for example a request for clarification coming from a new student; and others in relation to which one should feel a lot of anger, for example one involving hostile comments made towards another student.

Nothing that Aristotle has said in any of his arguments or in any of his numerous examples ever suggests that the conception of moral virtue as a mean state that avoids deficiency and excess is meant to directly inform a single decision or choice for how one should act and feel in specific situations. All that he has argued is that, with respect to every action (action being conceived as a continuously divisible movement), there is an excess, deficiency, and a mean in the passions—ultimately the pleasures and the pains—that the agent may experience in response, and that the virtuous condition will, in every case, correspond to avoiding extremes and hitting a mean, just as it is with the healthy conditions in the body according to the sciences of medicine and gymnastics. Thus, any criticism of the practicality of the doctrine of mean is irrelevant to Aristotle's argument: the doctrine shows how Aristotle thinks we should conceive of virtues and vices. Realizing this helps us understand why he goes on to define and structure his theoretical account of specific moral virtues and vices as he does. The doctrine of the mean is not something that he imagines agents consciously (or even unconsciously) incorporating into decision-making processes. The way that virtue is produced is not by pursuing the mean in every action, but by being habituated, through education, training, and punishment, to feel the appropriate amount of pleasure and pain in response to every action.<sup>24</sup>

24 For a compatible and persuasive account of habituation, see Leunissen (2017), especially 135–138 and 177–178. Note that Leunissen argues that physiognomy is another and parallel domain (besides ethics) in which Aristotle applies a doctrine of the mean (see especially 73–77).

Since the success of Aristotle's doctrine of the mean depends, then, not upon its practical usefulness but on its theoretical soundness, we should assess it by investigating how solid the inductive basis on which it rests is.

### 3 On Ancient Medicine 9

Aristotle has staked his claim that ethical virtue is a mean state upon the grounds that gymnastic training and medicine aim at a mean avoiding excess and deficiency. And we find this verified in *On Ancient Medicine* 9 (with traditional section numbers).

⟨1⟩ Now if it were as simple as has been suggested, and stronger foods harmed while weaker ones benefited and nourished both the sick and the healthy, then things would be easy: for it would simply be necessary to lead a patient towards the weakest diet, and one could do so with a good deal of security. ⟨2⟩ But in fact the error is no less, nor does it harm the human being less, *if one administers food deficient in quantity and quality to what is needed* (ἐλάσσονα καὶ ἐνδεέστερα τῶν ἰκανῶν προσφέρηται): for the might of hunger penetrates forcefully into the human constitution to lame and weaken and kill. And many other ills, different from those arising from repletion but no less serious, also arise from depletion. ⟨3⟩ For this reason, the doctor's tasks are much more varied and require more precision. For *one should be skilled at hitting a mean* (Δεῖ γὰρ μέτρου τινὸς στοχάσασθαι); but you will find no mean—nor number nor weight besides—by referring to which you will know with precision, except the perception of the body (τοῦ σώματος τὴν αἴσθησιν). Hence it is difficult to acquire knowledge so precise that one errs only slightly in one direction or the other.<sup>25</sup>

In sections ⟨1–2⟩, the author identifies two extremes that must be avoided in prescribing a diet for a patient. One extreme, the most obvious, is repletion, too much food, the excess. The author emphasizes that depletion, too little food, the deficiency, is equally harmful and must also be avoided. He makes this point by referring to the “application” (προσφέρηται) of food, which parallels the principle for which Aristotle offers an inductive proof in *Eth. Eud.* 2.1: “Every disposition is produced and destroyed by the same things *being applied* in a certain way” (πάσαν διάθεσιν ὑπὸ τῶν αὐτῶν γίγνεσθαι καὶ φθίρεσθαι πῶς

25 VM 9 (1.570 L. = 84,1–15 Schiefsky), trans. Schiefsky, adapted.



προσφερομένων, 1220a26–27). Recall that the examples given there were, “just as for health” (ὡσπερ ὑγεία), “nutrition and exercise” (τροφῆς καὶ πόνων).

In section <3>, the author makes the essential claim that Aristotle has said is made in the art of medicine: “one should be skilled at hitting a mean” (Δεῖ γὰρ μέτρου τιῶς στοχάσασθαι). In fact, Aristotle may deliberately echo this in the conclusion to the *Eth. Nic.* 2.6 argument: “therefore virtue is a mean state, since it is skilled at hitting the mean” (μεσότης τις ἄρα ἐστὶν ἡ ἀρετή, στοχαστική γε οὖσα τοῦ μέσου) (1106b27–28).

What the author goes on in <3> to say about finding the mean is interesting because of his modesty about the limited precision (ἀκριβές) that is possible. The degree of precision that Aristotle says is possible in the analogous case of ethics is similarly limited. The Hippocratic author says that precision is limited because we depend on “the perception of the body” (τοῦ σώματος τὴν αἴσθησιν).<sup>26</sup> Does this refer to the perception in the body of the patient (e.g., the pain or pleasure experienced by the patient in reaction to treatment), or to the perception on the part of the physician of the patient’s reaction?<sup>27</sup> Although there are considerable arguments that can be given for either interpretation, the use that Aristotle makes of these ideas might suggest that it is the feeling in the body of the patient that is important. As Aristotle applies the doctrine, it is the agent’s own feeling of pleasure or pain that may be deficient or excessive, or at a mean, in the context of parameterized actions, thus indicating the absence, or presence, of moral virtue. Moral virtue, and thus the mean, is concerned with *both* actions and passions, the passions being feelings in the part of the soul that is obedient to reason, feelings ultimately reducible to pleasure and pain, kinds of *aisthêsis*. But what could correspond to “the perception of the physician” in the ethical case would be the perspective of the teacher, trainer, or judge who, observing the subject’s reactions, tries to determine the right amount of reward or punishment to apply for the sake of reforming their habits.

#### 4 On Regimen

Commentators on *Eth. Nic.* 2.6 have often noted the close parallel with *On Ancient Medicine* 9,<sup>28</sup> but the views contained in *On Regimen* fit even more per-

26 Jaeger (1957) 56, 58.

27 Schiefsky (2005) 196–199 offers a useful summary of the alternatives but concludes that αἴσθησις “refers to the body’s reaction ... as it is perceived by the patient” (199).

28 See Stewart (1892) 175; Kalchreuter (1911) 49; Wehrli (1951) 40–41; Jaeger (1957) 56–58; Lloyd (1968) 74n16; Gauthier and Jolif (1970) 118–119; Hutchinson (1988) 42–43.

factly with Aristotle's claim that medicine aims at a mean avoiding deficiency and excess. Hynek Bartoš has shown that Aristotle was familiar with this text, and that reflections of *On Regimen* appear in the theoretical works.<sup>29</sup> Here I will build on his results and extend them to Aristotle's ethics.

I begin by pointing out that the Hippocratic author makes the same assumptions about the importance of the proportionality of food to exercise for producing health that Aristotle makes in the Milo example.

Eating alone will not make a human being healthy; one must also take exercise. For food and exercise, while possessing opposite qualities, yet work together to produce health. For it is the nature of exercise to use up material, but of food and drink to fill up what has been depleted (ἐκπληρῶσαι τὰ κενωθέντα). And it is necessary, as it appears, to discern the power of the various exercises, both natural exercises and artificial, to know which of them tends to increase flesh and which to lessen it (ἐς αὔξησιν ... ἐς ἔλλειψιν); and not only this, but also the proportion (τὰς ξυμμετρίας) of exercise to bulk of food, to the nature of the individual, to the age of the body, to the season of the year, to the changes of the winds, to local conditions, and to the constitution of the year. One must observe the risings and settings of stars, that he may know how to watch for change and excess (τὰς μεταβολὰς καὶ ὑπερβολὰς) in food, drink, wind, and the whole universe, from which diseases grow naturally for human beings.<sup>30</sup>

The author refers not only to food and exercise, but also to season, and so this passage fits perfectly into the network of passages we have been discussing, especially *Eth. Eud.* 2.1, where Aristotle says "every disposition is produced and destroyed by the same things applied one way or another, such as health by food, exercise, and season. This is clear by induction". For here in *On Regimen*,

29 "Aristotle knew *On Regimen* and read it closely. Moreover, accepting that Aristotle regularly alludes to the text of *On Regimen* and presents even the most peculiar of its ideas as if they were commonplace, one may infer that he reads the text as a representative of a more general approach and that he even expects his audience or intended readers to be well acquainted with the dietetic account. This suggests that already in Aristotle's time *On Regimen* stood as a standard point of reference ... there is no other extant text of the time which shows so convincingly the debt of Aristotle to his medical predecessors" (pp. 288–289). Bartoš (2015) briefly refers to parallels to the *Eth. Eud.* (1220a24–28 at 288 n. 258) and *Eth. Nic.* (1103a23–26 at 283 n. 242).

30 *Vict.* 1.2 (VI.466–468 L. = 125,4–17 Joly-Byl) trans. Jones, adapted. On the parallel between *On Regimen* 1.2 and Aristotle's *Eth. Nic.* 2, see: Kalchreuter (1911) 38, 53; Wehrli (1951) 43n. 23; Lloyd (1968) 75 n. 17; Hutchinson (1988) 23–24.

we find the very support needed for the doctrine that excess and deficiencies of various kinds cause diseases and sufferings of the body, and that the remedy involves the determination of proportionality of exercise to food, adjusted for all parameters including season, age, physique, etc. The Hippocratic author continues by emphasizing the importance of avoiding both excesses and deficiencies.

⟨1⟩ But even when all this is discerned, the discovery is not complete. If indeed in addition to these things it were possible to discover relative to each nature (πρὸς ἐκάστην φύσιν) a due measure (μέτρον) of food and a proportionate amount (ἀριθμὸς σύμμετρος) of exercise, neither for the more nor the less (μήτε ἐπὶ τὸ πλεόν μήτε ἐπὶ τὸ ἔλασσον), a discovery of health for human beings would have been made precisely (ἀκριβῶς). ⟨2⟩ But as it is, although all the things previously mentioned have been discovered, this last discovery cannot be made. Now if one were present and saw, he would have knowledge of the man as he stripped and practiced his exercises, so as to keep him in health by taking away here and adding there. But without being present it is impossible to prescribe the exact amount of food and exercise ... In fact, if there occur even a small deficiency (ἐνδεέστερα) of one or the other, in course of time the body must be overpowered by the excess (ὑπὸ τῆς ὑπερβολῆς) and fall sick. ⟨3⟩ Now the other investigators have attempted to carry their researches to this point, but they have not gone on to set them forth. But I have discovered these things, as well as the forecasting of an illness before the patient falls sick, *based upon the direction in which is the excess*.<sup>31</sup>

In section ⟨1⟩, the author verges on claiming that finding the “mean” for food and “the proportionate amount” of exercise is the entire focus of medicine, which would fit with Aristotle’s inductive claims perfectly.<sup>32</sup> In ⟨2⟩, however, the author discusses a limitation: the failure of perception (of “seeing”) on the part of the physician that would, if successful, allow him to determine the “mean” and “proportionate amount” precisely. This relates to the concern of the author of *On Ancient Medicine* that the mean cannot be determined precisely because of dependence on “the perception of the body”, where this apparently referred to the reaction of the patient. But, as we saw, that passage could be

31 *Vict.* 1.2 (VI.470–472 L. = 124,17–26 Joly-Byl), trans. Jones, adapted.

32 On this passage, see further Hutchinson (1988) 34.

interpreted so as to refer to the perception on the part of the physician of the patient's reaction. The main concern of the author of *On Regimen* seems to be with the impracticality of observing the exercise and dietary regimen closely enough, making it difficult for the physician to determine the mean amount of food and the proportionate amount of exercise precisely.

In <3>, the Hippocratic author claims that he has, after all, determined how to forecast illness based on “the direction of the excess” (ἀπὸ τῆς ὑπερβολῆς). Thus, he continues to provide inductive support for Aristotle's arguments about the importance of the mean and the extremes in the arts and sciences. The Hippocratic author's commitment to this medical methodology and his humility about the amount of precision possible is consistent in several later reiterations of his account.<sup>33</sup> Extensive and detailed prescriptions based on this theory are offered in *On Regimen* 2–3, specifying the appropriate amount and kind of food, and proportionate amount (and kind) of exercise, all of this relativized to certain physiques, seasons, climates, wind situations, and ages of the patient, thus avoiding, in every case, the excesses and deficiencies that cause various kinds of disease.

In a way one could read Aristotle's *Eudemian* and *Nicomachean Ethics* 2–3 as counterparts to *On Regimen* 2–3, since Aristotle develops a general theory of moral strength and health and offers his accounts of the specific virtues as “mean states” in both passions and actions, states that avoid excesses and deficiencies relative to the parameters mentioned above. The Hippocratic author with whom he agrees on so much does not supply such an account, although in 1.35 he offers an account of how intellectual virtue can be improved or weakened by the food and exercise regimen. An example of what he says there shows the similarity to Aristotle's way of thinking.

Following such a regimen should make them more healthy and more intelligent (ὑγιεινότερος ἂν καὶ φρονιμώτερος). But if the fire should be mastered to a greater extent by the water in the soul, we have then cases of what are called by some ‘senseless’ people and by others ‘grossly stupid’. Now the imbecility of such inclines to slowness; they weep for no reason, fear what is not dreadful (δεδιάσι τε τὰ μὴ φοβερὰ), are pained at what does not affect them, and their perceptions are really not at all those appropriate to the sensible or intelligent people (αἰσθάνονται τε ἐτεῆ οὐδενὸς ὡς προσήκει τοὺς φρονέοντας).<sup>34</sup>

33 E.g., 2.66 and 3.67–69.

34 *Vict.* 1.35 (VI.518–520 L. = 154.6–11 Joly-Byl), trans. Jones, adapted.

The Hippocratic author thus proposes a regimen based on avoiding deficiencies and excesses and aiming at a mean amount of food and proportionate amount of exercise that promises to improve not only health but also intelligence, thus avoiding a condition that renders people unable to properly regulate their emotions, so that they do not fear as one should, or feel pain as one should, and in general do not have the right perceptions (*αἰσθάνονται*), that is, not those *appropriate to the sensible or intelligent people* (*προσῆκει τοὺς φρονέοντας*). We are very close to Aristotle's own conception of moral virtue, defined in the *Nicomachean Ethics* as "a state concerned with choice, lying on a mean relative to us, this being determined by reason and in the way in which the sensible or intelligent person would determine it" (*ὁ φρόνιμος ὀρίσειεν*) (1106b36–1107a2). But although the Hippocratic author in the above passage does mention passions relevant to the moral virtues (like fear and pain), in the very next chapter of *On Regimen*, he pointedly denies that his account applies to other important moral virtues and vices.<sup>35</sup>

It is this blending, then, that is, as I have now explained, the cause of the soul's intelligence or want of it; regimen can make this blending either better or worse. When the fire prevails in his courses, it is doubtless possible to add to the water, and, when the water prevails in the blend, to increase the fire. These things are the source of greater or less intelligence in souls. But in the following cases the blend is not the cause of the characteristic: irascibility, indolence, craftiness, simplicity, quarrelsomeness and benevolence. In all these cases the cause is the nature of the passages through which the soul passes. For such dispositions of the soul depend upon the nature of the vessels through which it passes, upon that of the objects it encounters and upon that of the things with which it mixes. It is accordingly impossible to change the above dispositions through regimen, for invisible nature cannot be molded differently.<sup>36</sup>

It is remarkable that the Hippocratic author claims that his account of "physical blending" can account for intellectual virtue (and thus vice) but admits that the same account cannot deal with "irascibility, indolence, craftiness, simplicity, quarrelsomeness and benevolence". These virtues and vices the author attributes not to the proportionality of food and exercise that affects the proper blending of hot and cold elements causing health or disease, but to "the pas-

35 See also Wehrli (1951) 53; Hutchinson (1988) 19.

36 *Vict.* 1.36 (VI.522–524 L. = 156,19–27 Joly-Byl), trans. Jones.

sages through which the soul passes". The author also mentions "the objects the soul encounters" and "the things with which it mixes", which may be related to the parameters in action that Aristotle insists must be taken into account in determining the virtuous amount of passion (pleasure or pain) for a subject to experience in a particular set of circumstances. Although the Hippocratic author cannot supply an account of these objects and how they relate to a healthy experience of passions, we know that Aristotle at least attempted to do so in his *Ethics*.

That he was influenced in this attempt by the medical literature seems beyond doubt. Moreover, it can be said that Aristotle stands on solid inductive ground when he claims that arts such as gymnastic training and medicine aim at a mean and avoid excess and deficiency. This really was a credible medical theory of the "good condition" that could be extended to a theory of habits of the soul and thus an account of moral virtue.

### Conclusion

The ground for extrapolation from the medical doctrine of the mean to the moral one was prepared by Aristotle's main predecessors in ethics, Plato, Isocrates, and Democritus.<sup>37</sup> They had already compared politics and medicine, and were the crucial intermediaries between medical doctrines and Aristotle's moral and political extrapolations from them. However, the passages that we have examined in the Hippocratic Corpus so perfectly fit Aristotle's claims, and his claims are so much in need of their support by his own indications, that it is tempting to think that these very texts, and whatever other medical texts are parallel to them, are precisely those texts on which Aristotle's inductive claims are based.<sup>38</sup>

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37 See further Hutchinson (1988) and Bartoš (2015) 175–181, 231–241.

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