

RESEARCH

Enmattered Virtues

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I argue that, for Aristotle, virtues of character like bravery and generosity are, like the emotions, properties that require ahylomorphic analysis. In order to understand what the virtues are and how they come about, one needs to take into account their formal components and their material components. The formal component of a virtue of character is a psychic disposition, its material component is the appropriate state and composition of the blood. I defend this thesis against two potential objections and I show that it is relevant for a study of Aristotle's ethics.

Keywords: Aristotle; Hylomorphism; Ethics; Virtues

1. Introduction

Entities in the physical world are, for Aristotle, compounds of matter and form, or hylomorphic compounds. Aristotle's hylomorphism has wide application in his physics, metaphysics and psychology. In this paper, I look at it in an under-explored context: the ethical works. I concentrate in particular on the virtues of character.¹

I argue that the virtues of character are, like the emotions, hylomorphic enmattered forms (*logoi enhuloi*, see *DA* 403a25–27). Virtues and emotions are not hylomorphic substantial compounds, but properties of the hylomorphic compound of body and soul.² Nonetheless, for Aristotle, in order to analyse them correctly we need to take into account both their formal aspect and their material aspect. In order to analyse temperance, for example, we need to take into account the fact that it is an excellent psychic disposition toward bodily pleasures realised in a specific constitution of the blood.

This hylomorphic account of the virtues (and of the emotions) raises a question about their metaphysical status. One might think that hylomorphic properties like the emotions and the virtues are entities similar to substantial hylomorphic compounds. If this is correct, it suggests that for Aristotle hylomorphic properties are entities in their own right and it raises the challenge to distinguish them appropriately from substances. Another possibility is that even though hylomorphic properties are not really self-standing entities, they require a hylomorphic analysis because they fundamentally depend on a bodily material component and on a psychic formal component.³

In this paper, I leave this question on the metaphysical status of the virtues (and of the emotions) open. My purpose is to show that the virtues require a hylomorphic analysis because their existence and explanation

¹ As it will become clear in what follows, my work on the material aspect of the virtues is indebted to Mariska Leunissen's, especially in (Leunissen 2012; Leunissen 2015b; Leunissen 2016; Leunissen 2017).

² The virtues are states (*hexeis*) at *NE* 1096a25 and they are treated as properties that belong to the compound of body and soul at *NE* 1178a14–23. On the emotions as properties of body and soul, see *inter alia* *DA* 403a3–19. *Pathos* at *DA* 403a3 means 'attribute' and not 'emotion', as suggested by the fact that at *DA* 403a7–9 perception and thought are examples of *pathē*. Cf. (Johansen 2006: fn. 1 and 5). In this paper, I follow the ethical and the psychological works in treating the virtues and the emotions as properties or qualities *contra* (Leunissen 2017: ch. 5.2). At *Phys.* 246b3–4, *Phys.* 247a1–4 and *Cat.* 6b15–16 virtue is in the category of relation, at *Cat.* 11a20–36 Aristotle suggests that the genera of states like knowledge (and therefore virtue) are in the category of relation, but the particular cases (and therefore the particular virtues) are qualities. On Aristotle's ambivalence about the ontology of the emotions at *Cat.* 9b33–10a10, see (Knuuttila 2003).

³ I thank Margaret Cameron and Charlotte Witt for pushing me to clarify this point.

fundamentally depend on bodily causes and psychic causes. If my thesis is right, it calls for a closer study of Aristotle's references to material explanations in his ethical works. It also demonstrates that his ethical theory is deeply entrenched in his natural science.

2. Enmattered Forms

At *DA* 403a3–8, Aristotle asks whether the attributes (*pathē*) of the soul are peculiar to the soul or shared between the soul and the body. To answer this question, he looks more specifically at the case of emotions like 'spirited desire, gentleness, fear, compassion, confidence, love and hate' (*DA* 403a17–18). Since a specific bodily condition is required for their presence and as part of their causal explanation, the emotions are 'with the body' (*meta sōmatos*). In absence of a correct bodily condition, we are not moved to fear even if we are confronted with obviously fearsome events. In presence of a suitable bodily condition almost unnoticeable provocations cause anger. Similarly, some bodily processes can lead us to feel fear even in absence of frightening things.⁴

Aristotle takes his analysis to show that the emotions require a specific kind of account:

If this is so, it is clear that the emotions are enmattered forms (*logoi enhuloi*). Consequently, definitions will be of this sort, for example: 'being angry is a sort of motion of a body of such a sort, or of a part or capacity of a body, brought about by this for the sake of that.'⁵

Since emotions are enmattered forms, their account must include a reference to matter. For example, the appropriate account of anger is as a 'boiling of the blood around the heart for the sake of revenge' or as a 'hot blooded desire for revenge'. Unlike the dialectician, the natural scientist does not merely study anger as a desire for revenge. She includes in its account the boiling of the blood (*DA* 403a28 ff.). The natural scientist thus achieves a fuller understanding of anger and she also grasps an account that correctly explains the causes of anger.

Aristotle suggests here that in order to understand the psychophysical causes and preconditions of the emotions as enmattered forms we need a hylomorphic account.⁶ This raises the question whether the virtues of character also require a similar hylomorphic analysis. After all, the virtues are defined as mean states in relation to actions and emotions. We are in a virtuous state when we feel and act in the right way, at the right time, in relation to the right things, for the right goals, and so on (*NE* 1106b15–20). The virtues of character may be enmattered just like the emotions because they are (at least in part) defined in terms of the emotions.

The definitional link with emotions, however, is not on its own enough to show that the virtues require a hylomorphic analysis. The virtues are excellences of the soul (*Phys.* 246b3–8; *NE* 1096a25). The definition of character virtue at *NE* 1106b36–1107a1 does not make explicit reference to matter.⁷ Hence, the virtues may be psychic dispositions to act well and feel the correct emotions that lack a settled material underpinning and explanation. The importance of the material aspect of the virtues of character, however, comes to light from a study of the material preconditions for the virtues' existence and from a study of the material sources

⁴ *DA* 403a19–25. For an analysis of these examples see (Charles 2008: 5–6).

⁵ εἰ δ' οὕτως ἔχει, δῆλον ὅτι τὰ πάθη λόγοι ἐνυλοὶ εἰσιν· ὥστε οἱ ὄροι τοιοῦτοι οἷον τὸ ὀργίζεσθαι κίνησις τις τοῦ τοιοῦδι σώματος ἢ μέρους ἢ δυνάμεως ὑπὸ τοῦδε ἔνεκα τοῦδε.

DA 403a25–27. Trans. of *DA* based (sometimes loosely) on (Shields 2016). Shields suggests following the attested *en hulēi* instead of *enhuloi* at *DA* 403a25. For my purposes here, both forms are suitable.

⁶ Unlike Charles (2008) and Peramatzis (2011: 106), I do not think that this necessarily implies that matter is part of the form of the emotions. On my view, emotions as forms may require definitions that imply that they can only exist in matter, see (Frede 1990). My account is compatible with different answers to other controversial questions in Aristotle's hylomorphism, e.g. the question whether the psychic and the bodily components of psychophysical phenomena are separable (in thought or in existence) from each other and from the phenomenon as a whole. David Charles argues that the components are inseparable from each other and from the whole, Victor Caston argues that the components are separable from each other and from the whole. Both agree that the whole is not separable from the components. See (Charles 2008; Caston 2008). In what follows, I don't take a stance in this debate. I only assume that the hylomorphic property is inseparable from its material and formal components.

⁷ This does not show that the virtues of character are not enmattered. The definitions of virtue at *Nicomachean Ethics* ii. 5–7 might be appropriate to the context of the discussion, which is meant to clarify the genus and species of the virtues and to prepare for a more detailed discussion of each specific virtue. In this respect, the definition of virtues in the *Nicomachean Ethics* could be similar to the definitions of emotions in the *Rhetoric*. The definitions of emotions in the *Rhetoric* are matter-less, but they are not necessarily incompatible with the enmattered accounts we find in *De Anima*. The matter of emotions is briefly mentioned at *Rhet.* ii 12–15, but for the purposes of studying the method of persuasion, it suffices to study the emotions *dialectically*, i.e. without reference to their matter see (Striker 1996; Rapp 2006: 203). Thanks to Bryan Reece for pushing me to clarify this point.

of the virtues' development.⁸ As I will show, a specific material constitution is an existential precondition for the virtues of character. In addition, the virtues are excellent psychophysical states with both bodily and psychic efficient causes. This is why an appropriate account of the virtues includes both their material bodily aspect and their psychic formal aspect.

Let us begin with the virtues' material preconditions. The virtuous person feels correct pleasures and pains, she has correct desires and emotions and also a correct grasp of evaluative features like pleasure, advantage and fineness.⁹ For Aristotle, a certain balanced physiological constitution is necessary for the virtuous person to be moved correctly, to feel pleasure correctly and to recognise pleasure, fineness and advantage. For example, young people and melancholic people are unable to see aright in matters of pleasure and pain because of their bodily constitution. For the same reason, they are torn by bad violent desires:

Indeed, the [process of] growth makes young people's condition similar to an intoxicated person's and [hence] youth is pleasant. Naturally melancholic people, by contrast, are always requiring cure, since their bodily mixture causes their body continual turmoil, and they are always having intense desires.¹⁰

Young people cannot recognise pleasant, fine and advantageous things because they are still growing and they are similar in constitution to drunken people. Melancholics are constantly tormented and bitten by violent desires because of their bodily mixture (*krāsis*). This suggests that correct value judgements, correct desires and correct pleasures require a specific bodily constitution. Hence, the virtues of character are at least to some extent dependent on a correct bodily constitution.¹¹

The fact that a psychological state requires some bodily preconditions is necessary but not sufficient to prove that the state in question is an enmattered form. Even if certain material preconditions are necessary for us to be able to think, Aristotle is prepared to consider seriously the hypothesis that thought is not enmattered and thereby does not require a hylomorphic analysis (*DA* 403a6–10). To see whether the virtues are enmattered, we need to look at the role matter plays in their development.

In Aristotle's biological works, the development of character virtues has both psychic causes and physical causes. Character virtues are peculiarly human and they grow out of natural virtues through teaching and habituation. Adult humans share natural virtues with non-human animals and children, and natural virtues have material-efficient causes:¹²

It is plausible that the nature of the blood is the cause of many features with respect to the animals' character and perception: for it is the matter of the whole body.¹³

The constitution of an animal's blood is the *cause* of many of its character traits because it is the matter of its body. Since the constitution of the blood is a material and also an efficient cause of a given character trait, it is not merely necessary for its existence.¹⁴ Among the traits caused by the constitution of the blood, Aristotle

⁸ See (Leunissen 2012; Leunissen 2015b; Leunissen 2016) less recently (Hardie 1964, 69; Tracy 1969, 247; Lennox 1999).

⁹ See *inter alia* *NE* 1104b30–1105a1; *NE* 1151b33–1152a6; *NE* 1176a16–19 and *NE* 1173b20–24.

¹⁰ ὁμοίως δ' ἐν μὲν τῇ νεότητι διὰ τὴν ἀξίησιν ὥσπερ οἱ οἰνομένοι διάκεινται, καὶ ἡδὺ ἢ νεότης. οἱ δὲ μελαγχολικοὶ τὴν φύσιν δέονται ἀεὶ ἰατρείας· καὶ γὰρ τὸ σῶμα δακνόμενον διατελεῖ διὰ τὴν κρᾶσιν, καὶ ἀεὶ ἐν ὀρέξει σφοδρᾷ εἰσίν· *NE* 1154b9–13. Trans. of the *NE* are based on (Irwin 1999).

¹¹ See further Tracy (1969: 249 ff.), who connects pleasure and pain as activities of the perceptual mean in *DA* 431a10–14 to the balanced bodily constitution of the virtuous person.

¹² *NE* 1144b1–16, *HA* 588a25. The fact that our natural virtues are embedded in a context of habituation and teaching does not make them different from non-human natural virtues. At least some non-human animals can be habituated and taught too (*HA* 608a16–20). I thank Charlotte Witt for pressing this objection.

¹³ Πολλῶν δ' ἐστὶν αἰτία ἢ τοῦ αἵματος φύσις καὶ κατὰ τὸ ἦθος τοῖς ζῴοις καὶ κατὰ τὴν αἴσθησιν, εὐλόγως· ὅλη γὰρ ἐστὶ παντὸς τοῦ σώματος. *PA* 651a12–14. Trans. based on (Lennox 2002).

¹⁴ See (Leunissen 2012: 514–20; Leunissen 2017: ch. 2 and 3) for the thesis that the connection between blood-type and character traits goes beyond top-down conditional necessity and includes bottom-up material-efficient causation. As Gelber (2015) shows, the thesis that matter is explanatorily primitive creates a number of problems in Aristotle's biology. See also, in different contexts, (Connell 2016: ch. 10; Deslauriers 2009). In the case of the virtues, as I argue below, a number of passages suggest however that material causes operate at the same level as formal causes. It is beyond the scope of this paper to analyse whether and how these claims can be squared with Aristotle's biology. On conditional necessity, see *Phys. ii. 9*, *PA i. 1*. For further discussion on the role of conditional necessity in Aristotle's study of nature see *inter alia* (Charles 1988; Cooper 2009; Leunissen 2010: 76–111). For the idea that at least in some cases material-efficient causes can operate independently of conditional necessity see (Leunissen 2010: 81–111); for the idea that they can constrain conditional necessity see (Gill 1997; Lennox 1997; cf. *inter alia* *PA* 639b29–640a9; *PA* 663b25–36; *PA* 658b23–26; *GA* 778a29–b1).

includes natural virtues. Some animals are spirited and brave because their blood is thick and fibrous, others are cowardly because their blood is thin and watery.¹⁵ At *PA* 648a9–11, a combination of hot, thin and pure blood is an excellent state that corresponds to courage. At *PA* 686b25–27, the bodily and sluggish principle (*archē*) of the soul is the cause of limited intelligence. Material-efficient causes can be the source of inter-specific differences in character traits, for example the difference between timid ants and choleric bulls at *PA* 650b20–651a2. Material-efficient causes can also be the source of intra-specific differences, including the difference between brave people who live in cold regions and cowardly people who live in hot regions (*Pol.* 1327b18–38).

The virtues of character differ from natural virtues because we are not born with them and we do not share them with animals and children, but we acquire them through habituation and teaching.¹⁶ Despite these differences, we have reason to think that character virtues are enmattered like natural virtues. The development of character virtues from natural virtues has psychic causes like the perceptual and intellectual changes brought about by teaching and habituation. However, it has material-efficient causes too. At *Phys.* 247a5–9, the virtues of character are concerned with bodily (*sōmatika*) pleasures and pains. The virtues are not themselves alterations, but they come to be when the perceptual part of the soul is altered by means of bodily pleasures and pains.¹⁷ Bodily pleasures and pains are accompanied by heatings and chillings (*De Motu* 701b33–38). It is plausible to think that pleasure, pain, heatings and chillings, like other psychophysical alterations, are to some extent retained in the perceptual organs and in the heart.¹⁸ In the long run, heatings and chillings alter the blood's temperature, thus making it more or less conducive to virtue. For example, for Aristotle, colder blood is less likely to boil in anger and therefore unsuitable for courage and strength.¹⁹

The *Politics* and the *Problems* confirm that heating and chilling of the blood can lead to changes in character dispositions and in virtues.²⁰ At *Pol.* 1327b19–1328a5, different people develop different character dispositions depending on whether they live in colder or hotter climates. Hotter and colder climates affect one's character because they affect one's constitution and the temperature of one's blood (*Probl.* 909b24–33 and *Probl.* 910a37–b8). For example, at *Probl.* 910a37–b16 either the blood compensates for the hotter climate by becoming colder, or its cooling is an effect of the changes in bodily constitution caused by the hot climate. Hotter blood is conducive to bravery but leads to a less inquisitive mind, colder blood leads to cowardice but tends to be accompanied by wisdom.

The fact that diet and training of the body play a role in moral education also supports the thesis that the development of character virtues has a physiological backdrop. To generate a military disposition (*polemikē hexis*), one should nourish children with milk and bathe them in cold waters (*Pol.* 1336a3–8). At *Probl.* 953a30–40 wine causes certain character affections and at *Probl.* 953b5–10 our bodily constitution (*physis*) affects character in the same way wine does.²¹ Gymnastics, similarly, is part of the educational process

¹⁵ *PA* ii. 4, I follow Leunissen (2012) for this account of inter-specific and intra-specific differences.

¹⁶ See *NE* ii. 1–5 and *NE* x. 9. Virtues of character also differ from natural virtues because they require practical wisdom. See below for discussion.

¹⁷ Here, I follow Leunissen (2015b) in seeing the description of moral education in the *Ethics* as compatible to the description in *Physics* vii. 3. My account differs from hers (Leunissen 2015b: 239–45; Leunissen 2017:106, 131) because (i) I do not take virtue of character to be (in) the good relation of the different capacities of the perceptual soul; (ii) I do not take natural virtues to be habituated; (iii) I do not assume that the physiology of moral education in the *Physics* is meant to explain the development of virtue as a single unified state (cf. *NE* vi. 13). First, at *Phys.* 247a1–20, Aristotle seems concerned with the virtues of character as different dispositions (e.g. bravery and generosity) and not with the development of the virtuous state as a unified condition that implies the presence of all the virtues. Evidence for this is that he refers to the virtues by using the plural (*Phys.* 247a20). Second, at *NE* 1144a28–29, natural virtues are present from birth and not acquired through a psychophysical process of habituation. Hence, habituation and teaching lead us from natural virtue to fully blown character virtue. Third, the virtues seem to be (in) good relations between the actions and emotions that give rise to them or destroy them, rather than (in) the good relation between the different capacities of the perceptual part of the soul. At *Phys.* 246b20–247a4, the virtues of character put us in a good condition toward their proper affections (*oikeia pathē*). The proper affections are those that give rise to and destroy the virtues, in analogy with the bodily virtues at *Phys.* 246b8–10. This implies that the virtues of character are found in and constituted by the appropriate relation between actions and emotions because actions and emotions give rise to them and destroy them (*NE* 1104a27–b3. See also Simplicius' *Comm. in Arist. Physics* 1067.5 ff.). The text of *Physics* vii has reached us in two versions. Here I rely on version α drawing on Maso's and Steel's version in (Stefano Maso 2011). Version β discusses the very same matters, but in a more succinct form.

¹⁸ *Insomn.* 459b1–7. See also *Insomn.* iii for the thesis that changes in the constitution of the blood brought about by ageing or emotional experiences can affect one's dreams (*Insomn.* 462a32–b12).

¹⁹ *PA* 648a1–4, see further *PA* ii 4. See *Probl.* 955a32–34 on how the hot and the cold are character-forming (*ēthopoion*). See (Castelli 2011) for the thesis that the *Problems* are for the most part concerned with natural virtue.

²⁰ (Leunissen 2012: 520–524).

²¹ See also *Problems* xxx. 1 and (Van der Eijk 2005) for an analysis of this and other passages on *melancholia*, and for the thesis the views expressed here are, if not Aristotle's own, at least compatible with his account of *melancholia*.

recommended in the *Politics*, presumably because, among other things, it directs children toward courage by changing their physical constitution.²²

Even outside the context of moral education, we find evidence that material causes, especially ageing, can be the source of character virtue. At *NE* 1121a20–21, ageing and the cooling of the blood that comes with it is the cause of the transition from excessive prodigality to appropriate generosity. In this case, the correct and full-blown virtuous mean is reached thanks to purely material causes.²³ Similarly, at *Rhet.* 1389a3–b12 young age and the hot blood constitution that comes with it is the cause of bravery, friendliness, even wittiness (*eutrapelia*, cf. *NE* 1108a24–26; *NE* 1128a5–10). At *Rhet.* 1389b13–1390a23, old age and its characteristic cold blood constitution is the cause of cowardice, lack of generosity and lack of wittiness.²⁴

Both bodily and psychic causes are at the origin of the transition from natural virtues to virtues of character. In addition, bodily and psychic causes have the same status. This is an important similarity between Aristotle's account of the sources of the virtues and his account of the sources of enmattered forms like the emotions. The source of an emotion can be a bodily process, a psychic process, or a process with both psychic and bodily aspects (*DA* 403a19–25). Similarly, at *Rhet.* 1389a18–26, the hot temperature and the spiritedness of the young is a cause of their bravery just as much as their hopeful disposition. Furthermore, sometimes Aristotle treats bodily causes as the decisive source of a virtue and sometimes he treats psychic causes as the decisive source for a virtue. An example of the former case is his view that ageing leads to generosity at *NE* 1121a20–21. An example of the latter case is the idea that habituating us to feel fear and confidence in the correct occasions leads to bravery at *NE* 1103b15–16. In both cases, the discussion concerns the development of full-blown character virtues.

A study of the material preconditions and of the causal sources of character virtues shows that, like the emotions, they are enmattered forms. If this is right, the virtues of character are psychophysical excellences whose correct analysis includes a formal psychological aspect and a bodily material aspect. The formal aspect of bravery, for example, is the psychological disposition to feel fear and anger at the right time, for the right reasons and so on. Its material aspect is the correct temperature and constitution of the blood, which regulate its propensity to boil and cool down.²⁵

By treating the virtues as psychophysical excellences, Aristotle suggests that they cannot be understood in separation from their material bodily aspect or their formal psychic aspect. The fact that they are, in part, bodily excellences explains why the virtues of character are *human* virtues and differ from divine virtues. For example, at *NE* 1178b10–25, divine virtues are separable from the compound of human body and human soul because they are psychic virtues and not necessarily also bodily virtues: their characteristic activity is a disembodied kind of intellectual contemplation. Similarly, without taking into account the virtues' psychic component, it is hard to distinguish them from bodily dispositions with similar behavioural effects that are not character virtues. Consider for example the difference between real bravery and a hungry donkey's disposition to endure blows. Due to its hunger, the donkey is in the correct bodily state to resist the pain of blows. However, being a non-rational animal, it lacks the correct psychic disposition to be genuinely brave (*NE* 1116b24–1117a5).

A first consequence of this account is that character virtues can only belong to embodied animals. They cannot exist or be understood in separation from their bodily aspect and could never belong to divinities. Furthermore, since the virtues require a certain constitution and temperature of the blood, they are not multiply realisable in different animal bodies. The constitution and temperature of the blood changes on the basis of environment and diet, but it is also affected by the physiology of a given organism. For example, larger hearts are conducive to colder blood and hence unsuitable for courage (*PA* 667a12–31). Conversely, the hot nature conducive to virtue is also conducive to an upright posture, which in turn fosters one's ability

²² *Pol.* 1337b22–28; *Pol.* 1338a31–b8 ; *Pol.* 1338b39–1339a10 and (Leunissen 2015b: 233 ff.) for discussion. Cf. *Rep.* 403d–e; *Rep.* 410a–412b.

²³ See (Leunissen 2016, sec. 3) on diet, age and environment affecting natural character. Unlike Leunissen, I take material causes to bring about full-blown character virtues too.

²⁴ Cf. the pseudo-Aristotelian *Physiognomics* 805a17. Aristotle describes ageing as involving a process of cooling down at *GA* 766b30–31.

²⁵ One might question the suitability of the temperature of the blood as the matter for dispositional states like the virtues, for the temperature of the blood is subject to variation whenever one is feeling or acting. Aristotle, however, believes that things are called hotter or cooler in many ways, and one of the ways in which something can be hotter or cooler is dispositional. For example, something can be hotter than something else merely because it takes less time for it to boil or melt (*PA* 648b12–649a21). I thank Kit Fine for raising this objection.

to think (*PA* 653a27–33, *PA* 686a25–687a4).²⁶ This suggests that the virtues could only be realised fully in creatures who stand upright and have a small heart.

A second consequence of this account of the virtues concerns Aristotle's views on the life and happiness (*eudaimonia*) of the virtuous person. Especially in the *NE* x, psychophysical character virtues are conducive to and constitutive of a peculiarly human happy life. This happy life is perhaps inferior to the one characterised by the exercise of intellectual virtues we share with divinities. Nevertheless, it still counts as a worthwhile and good life for beings like us.²⁷ On this account of human happiness, the excellent bodily (and psychic) state characteristic of human character virtues is neither an external requirement for happiness nor an external means to happiness. Unlike beauty or good fortune, the excellent bodily (and psychic) state characteristic of human character virtues is constitutive of our happiness and wellbeing.²⁸

3. Enmattered, Voluntary and Rational

Despite the evidence I discussed in the previous section, the thesis that the virtues of character are best studied in separation from matter is widespread. Interpreters appeal to two considerations to support it: the fact that virtues of character are up to us and the fact that they are linked to intellectual excellences.²⁹

Aristotle thinks that the virtues are up to us and voluntary (*NE* 1113b14–1114b25). If the virtues of character are enmattered, then material and bodily causes can be their efficient causes, i.e. the primary source of their development. Sometimes, psychic causes are decisive: learning to recognise fearsome things and confidence-inspiring things leads to the correct emotional states characteristic of bravery. On other occasions, as it happens in the case of hot blood generating bravery in young people, material and bodily causes are decisive.

Decisive material and bodily causes of the virtues of character have seemed, to Friedrich Solmsen at least, un-Aristotelian and somewhat repugnant:

How could a philosopher of Aristotle's standing and outlook sponsor a 'materialistic' doctrine which made man's ethos and mind dependent on the composition of his blood—a doctrine on which Plato would not even waste a word of refutation? It is safe to say that nowhere else in his work has Aristotle allowed himself to go so far toward destroying the autonomy of man's moral and intellectual virtues.³⁰

Before and after this passage, Solmsen reconstructs the material causes of natural virtues in the *Parts of Animals*. He argues that, despite the evidence in the biological works, Aristotle's ethically relevant accounts of the virtues cannot have material preconditions and material causes. This is because a *materialistic* account of the virtues would undermine the *autonomy* of the virtuous agent. There are at least two possible interpretations of Solmsen's objection: he might think that 'materialistic' virtues are causally determined, or he might think that they are more specifically determined by *material* causes. For Solmsen, one of these accounts of the causal origin of the virtues, or perhaps both, is incompatible with Aristotle's view that the virtues are up to us.³¹

Let us begin from the alleged tension between the thesis that the virtues are causally determined and that they are up to us. On a 'materialistic' view, our material constitution and environmental factors can causally determine whether or not we are virtuous. Hence, materially determined virtues are not up to us. Since character virtues are up to us, they cannot be materialistic.³²

²⁶ See (Leunissen 2012: 518–520) on the effects of the physiology of the heart, brain and liver on the constitution of an animal's blood.

²⁷ On whether Aristotle takes the highest kind of happy life to include the exercise of character virtues as well as theoretical contemplation see *inter alia* (Ackrill 1980). *NE* 1178a14–23 suggests that even if the happy life strictly speaking is limited to theoretical contemplation, there is a peculiarly human kind of happiness that involves the exercise of character virtues. For further discussion see (Whiting 1986).

²⁸ On external goods see *NE* 1099a32–b8; *EE* 1218b32; *Rhet.* 1360b22. On whether happiness is possible without external goods, see (Cooper 1985; Irwin 1985; Annas 1999).

²⁹ See (Solmsen 1950: 467; Viano 2005: 142–44) for the first, (Freudenthal 1995: 67 ff.; Dierauer 1977: 148–150) for the second objection.

³⁰ (Solmsen 1950: 467).

³¹ I take it that, for Solmsen, undermining the autonomy of the virtues means suggesting that they are not up to us.

³² Solmsen himself does not draw a distinction between natural virtues and character virtues. Viano (2005: 142–144) suggests that only natural virtues can be materially determined because unlike character virtues they are not up to us.

As I have reconstructed it here, this argument fails. Even if our material constitution and environmental factors causally determined our virtuous or vicious states, these vicious and virtuous states could count as up to us and voluntary. That we are (or we think we are) causally undetermined in our actions and states is not necessary for our actions and states to be up to us or voluntary. We (and our deliberation) are the decisive causal factors (*archai, kurioi* or *aitioi*) of the actions and states that are voluntary and up to us:

Since what is done under compulsion or because of ignorance is involuntary, the voluntary is that for which the cause is in the agent himself, the agent being aware of the particular circumstances of the action.³³

We need to be aware of the circumstances and to contribute causally to our actions in order for our actions to be voluntary. But we needn't be undetermined in our causal contribution in order to count as decisive causal factors.³⁴ Sometimes we will not be the decisive causal factors in the development of the material conditions that produce our character. Such material conditions can for Aristotle be dependent on our constitution at birth, our environment, our age and our gender.³⁵ But often *we will be* the decisive causal factors in the development of the material sources of our character. This is because these material-efficient causes of character include our behaviour, diet and training.³⁶

Even if there is no tension between causal determinism and the fact that the virtues are up to us, Solmsen's objection might still hold under a different interpretation. His idea might be that if our *material constitution* generates the virtues, then *we* can no longer be decisive causal factors in the generation of the virtues. Aristotle might have thought that we are essentially identical to our disembodied intellect and that we happen to be embodied and material only accidentally.³⁷ On this view, the problem of envisaging the virtues as enmattered is not so much a problem with causal determinism, but a problem with the appropriate understanding of the sense in which beings like us can be efficient causes.

Even this more sophisticated version of the objection seems to me questionable. Our material constitution can be the efficient cause of bodily virtues like health.³⁸ For Aristotle, bodily virtues and vices (including health and sickness) are at least in some cases voluntary and up to us:

It is not only the vices of the soul that are voluntary, but also for some people those of the body, and we actually blame these people; while no one blames those who are ugly by nature, we blame those who are ugly owing to lack of exercise and care. The same is true with respect to weakness and illness; no one would reproach a man blind from birth or because of a disease or a blow, but rather feel compassion for him, while every one would blame someone who was blind from heavy drinking or some other form of intemperance. Of vices of the body, then, those which are up to us are blamed, those which are not up to us are not blamed.³⁹

In this passage, Aristotle introduces the category of bodily vices and argues that we can either feel compassion for them or blame them. He says clearly that some bodily vices are voluntary and up to us. Only these bodily vices are blamed. If you end up having an unbalanced bodily mixture through indulgence or lack of exercise, you can be blamed for it. If you were born with an unbalanced bodily mixture, or if you developed

³³ ὄντος δ' ἀκούσιου τοῦ βία καὶ δι' ἄγνοιαν, τὸ ἐκούσιον δόξειεν ἂν εἶναι οὗ ἢ ἀρχὴ ἐν αὐτῷ εἰδῶτι τὰ καθ' ἕκαστα ἐν οἷς ἢ πράξις. *NE* 1111a22-24.

³⁴ At *NE* 1113b7–8 the actions that are up to us are such that we can do them or not; at *NE* 1112a21–30 we do not deliberate about things that are not up to us like the past and mathematical truths. These claims are not necessarily in tension with causal determinism. An action is up to us when we can causally contribute to it and we do not deliberate about things to which we cannot causally contribute to. See *inter alia* (Fine 1981: 576; Everson 1990: 88; Cooper 2013: fn. 12 and fn. 47; Bobzien 2014a) *contra* (Sorabji 1980: 22–42; Broadie 1991: 153). It is harder to establish whether Aristotle accepted determinism. See further (Everson 1990; Bobzien 2014b: sec. 5; cf. *De Interpretatione* ix).

³⁵ See *Pol.* vii. 7, *NE* 1179b21–23 and (Leunissen 2012: 520 ff.).

³⁶ *NE* 1104a10–19; *Pol.* 1336a3–8; *Pol.* 1337b22–28, cf. the previous section and (Leunissen 2016, sec. 3).

³⁷ Some points Aristotle makes in *NE* 1178a5–10 might be taken to gesture toward this view. See however (Whiting 1986) for an argument against this kind of transcendental intellectualism in Aristotle.

³⁸ Health is identified with good mixture of the body (*eukrasia tou somatos*) at *PA* 673b26 and a symmetry of hot and cold (*summetria termōn kai psuchrōn*) at *Top.* 139b20–21.

³⁹ οὐ μόνον δ' αἱ τῆς ψυχῆς κακία ἐκούσιοι εἰσιν, ἀλλ' ἐνίοις καὶ αἱ τοῦ σώματος, οἷς καὶ ἐπιτιμῶμεν· τοῖς μὲν γὰρ διὰ φύσιν αἰσχροῖς οὐδεὶς ἐπιτιμᾷ, τοῖς δὲ δι' ἀγυμνασίαν καὶ ἀμέλειαν. ὁμοίως δὲ καὶ περὶ ἀσθένειαν καὶ πῆρωσιν· οὐθεὶς γὰρ ἂν ὀνειδίσαιε τυφλῷ φύσει ἢ ἐκ νόσου ἢ ἐκ πληγῆς, ἀλλὰ μᾶλλον ἐλεῆσαι· τῷ δ' ἐξ οἴνοφλυγίας ἢ ἄλλης ἀκολασίας πᾶς ἂν ἐπιτιμήσαι. τῶν δὲ περὶ τὸ σῶμα κακιῶν αἱ ἐφ' ἡμῖν ἐπιτιμῶνται, αἱ δὲ μὴ ἐφ' ἡμῖν οὐ. *NE* 1114a21-29.

it as a result of an illness, you cannot be blamed. The first condition is voluntary and up to you, the second is not. The two cases do not differ in that the former is materially determined and the latter is not: both illness and exercise are material-efficient causes. Rather, the difference between the two cases lies in whether or not the cause is internal: in the voluntary case, the material cause is internal to the individual agent; in the involuntary case, the material cause is external, for it depends on nature or environmental factors. These examples show that enmattered states like health can be voluntary and up to us. This is true independently of whether or not our material constitution is part of our essence. But if health can be voluntary and up to us in this way, so can enmattered virtues of character.

Another reason to deny that the virtues of character are enmattered may be that they require practical wisdom (*phronēsis*, see *NE* 1144b1–16). The virtues are states that rationally decide and their status as means is determined by reason (or in accordance with reason, see *NE* 1106b36–1107a1). Without the guidance of a deliberative rational excellence, a virtue is blind and potentially harmful.⁴⁰ This rational excellence is shared between some adult humans and divinities and it is precluded to animals and children. A divine and eternal rational excellence of this sort may seem separable in existence and definition from matter and the body. Hence, character virtue has or it requires an intellectual component that is separate from bodily matter and needs to be analysed accordingly.⁴¹ At least part of the correct study of character virtue is best conducted without reference to its material causes and preconditions.⁴²

The thesis that a rational excellence separate from the body in definition and perhaps existence is necessary to turn mere natural virtue into proper character virtue is however implausible. Aristotle thinks that practical wisdom, i.e. the sort of rational excellence required by character virtue, is not separate (or separable) in definition and in existence from the body:

Virtue of character seems to be in many ways bound up with the emotions. Practical wisdom, too, is inseparable from virtue of character, and virtue of character from practical wisdom. For the principles of practical wisdom accord with the virtues of character; and correctness in virtues of character accords with practical wisdom. Since these virtues [sc. practical wisdom and the virtues] are connected with the emotions, they must belong to the compound. Since the virtues of the compound are human virtues, the life and the happiness in accord with these virtues is also human. The virtue of understanding, however, is separated from the compound.⁴³

In this section of the *Nicomachean Ethics*, Aristotle is concerned to show that a life of action is in some sense happy and in some sense inferior to the life of contemplation. Part of his argument for the inferiority of the life of action relies on the idea that this life is bound up (*sunoikeioō*) with enmattered emotions and bodily actions. This life belongs to us because we are embodied creatures and compounds of body and soul. Our embodied condition is contrasted with the alleged separability of the intellect, and associated with the inseparable unity of practical wisdom and virtue of character. Hence, the rational excellence of practical wisdom (typically associated with the virtues of character) is different from the kind of rational excellence that is separate or separable (in account or in existence) from matter and the body.⁴⁴

⁴⁰ There is debate in the literature concerning whether virtue is itself a rational excellence, or requires its possessor to have rational excellences (respectively Lorenz 2009; Moss 2012: ch. 7.3). See (Irwin 1975) for an introduction to the problem. The argument against the virtues as enmattered forms can be made independently of whether they are or they require rational excellences, but it might seem more compelling if they are rational excellences.

⁴¹ *GA* 736b27; *DA* 408b18–30; *DA* 413b24–35. See (Freudenthal 1995: 67–69; Dierauer 1977: 148–50) for the thesis that Aristotle grants humans a privileged ethical and intellectual status in comparison to the other animals by positing an intellect separate from the body. Freudenthal sees this as a solution to the problem about materialism and autonomy raised by Solmsen (1950: 467). However, Solmsen was not concerned with the privileged status of human character virtues and of the human intellect. Rather, he was concerned with the possible tension between causal or material determinism and the virtues being up to us.

⁴² Similarly, some claims concerning the separability of the intellect suggest that a study of the soul should be conducted, in part, in separation from the body. See e.g. *DA* 403b9–16; *Met.* 1026a5–6.

⁴³ καὶ πολλὰ συνφκειῶσθαι τοῖς πάθεσιν ἢ τοῦ ἡθους ἀρετῆ. συνέζευκται δὲ καὶ ἡ φρόνησις τῇ τοῦ ἡθους ἀρετῇ, καὶ αὕτη τῇ φρονήσει, εἴπερ αἱ μὲν τῆς φρονήσεως ἀρχαὶ κατὰ τὰς ἠθικάς εἰσιν ἀρετάς, τὸ δ' ὀρθὸν τῶν ἠθικῶν κατὰ τὴν φρόνησιν. συνηρημένα δ' αὐτὰ καὶ τοῖς πάθεσιν περὶ τὸ σύνθετον ἂν εἶεν· αἱ δὲ τοῦ συνθέτου ἀρεταὶ ἀνθρωπικαί· καὶ ὁ βίος δὲ ὁ κατὰ ταῦτα καὶ ἡ εὐδαιμονία. ἢ δὲ τοῦ νοῦ κεχωρισμένη· *NE* 1178a14–23. I take this passage to imply that the virtues and practical wisdom belong to the compound of body and soul and translate περὶ τὸ σύνθετον accordingly. The weaker reading according to which the virtues and practical wisdom are merely concerned with the compound is not in tension with the view I defend, for here Aristotle clearly contrasts character virtues and practical wisdom with the separate virtue of understanding.

⁴⁴ See also (Whiting 1986: 83; cf. Whiting 2002: 186) for a way in which *DA* *iii*. 9 might be brought in support of this argument.

Since practical wisdom is not separate from the compound of body and soul, the rational aspect of the virtues of character ought to be studied in conjunction to, not separately from, the body. Hence, the virtues can be subject to a hylomorphic analysis even if they require a rational excellence. Further evidence in the biological works may suggest that practical wisdom (*phronēsis*) too has material preconditions and material causes, for non-human animal *phronēsis* depends in part on the constitution of the animal's blood (see e.g. *PA* 648a10–11, *PA* 650b19–20). However, these considerations do not show that practical wisdom requires a hylomorphic analysis like character virtue. To argue that practical wisdom is enmattered in the relevant sense, one would need to study the relationship between human and animal *phronēsis* and to argue that human *phronēsis* has material efficient causes and preconditions.⁴⁵

4. Embodied Ethics and Natural Science

A closer look at Aristotle's hylomorphism in the context of his ethics suggests that the virtues of character are enmattered forms. Enmattered forms require specific material existential preconditions, material-efficient causes and a hylomorphic account. The virtues of character cannot be found in the absence of certain material preconditions, as their lack in young people and melancholics shows. Their development from natural virtues includes material causes. To understand what they are and how they come about, we must take into account both their physical and their psychic components. Furthermore, nothing prevents enmattered virtues from being up to us and from requiring practical wisdom.

The thesis that the virtues of character are enmattered forms sheds light on their connection with happiness (*eudaimonia*) and on the limits to their multiple realisability. Taking this thesis seriously has further consequences for our understanding of the links between Aristotle's ethics and his natural science. As enmattered forms, the virtues of character belong to Aristotle's study of nature just as much as they belong to his study of ethics. This suggests that a scientific study of the virtues can inform the study of ethics. Unlike natural sciences and theoretical sciences in general, ethics and political science aim at action and not at uncovering the truth for its own sake (*EE* 1216b12–20, *EN* 1095a5–6). Hence, not all the details of an exhaustive enmattered account of virtue is of political or ethical relevance. However, some features of the naturalistic study of the virtues are relevant. For example, ethicists and political scientists need to be acquainted with both the psychic and the material causes of the virtues because their aim is to make their students and citizens virtuous.⁴⁶ Similarly, a study of the material-efficient causes of the lack of virtue is relevant for an appropriate understanding of the causes of *akrasia* (*NE* 1148b15–1149a21; *NE* 1147b6–17).

A study of the virtues as enmattered forms can also be of interest for neo-Aristotelian accounts of the virtues. Aristotle treats the virtues as ethically relevant and scientifically relevant while recognising that they are affected by environmental, situational and material circumstances. He seems able to study the virtues in this way because he takes them to be both enmattered and up to us: ultimately we can be regarded as the primary efficient causes of our relatively stable character states. That the virtues are in some way dependent on morally irrelevant factors such as our blood constitution does not mean that they cannot be voluntarily acquired as stable traits. Neither does it mean that the virtues are ethically irrelevant. One lesson we might learn from Aristotle's enmattered virtues is that a clearer focus on what is voluntary and what is up to us can help us to analyse and perhaps to ease some of the tensions between situationist psychology and virtue ethics.⁴⁷

Naturally, Aristotle's enmattered virtue ethics might also raise some worries for its contemporary revivals. Aristotle's natural science is outdated and one might doubt that his ethical and naturalistic account of the virtues can still be employed in the contemporary philosophical discourse.

The thesis that the virtues are enmattered shows that a study of natural science is presupposed by Aristotle's ethics and can help us to understand it better. However, the overlap between the two disciplines is not perfect because the ethical works are also concerned with topics that may lie outside the study of nature. For example, at the end of the *Nicomachean Ethics*, Aristotle describes the contemplative life as the happiest life. Since the contemplative life is detached from matter, it may lie outside the study of nature and it may belong more properly to the highest science: theology (*NE* x, 7, *PA* 641a33–b36, *Met.* 1025b19–1026a33).

⁴⁵ This study lies outside the scope of this paper. See further (Labarrière 1990; Lennox 1999).

⁴⁶ See *inter alia* *NE* 1099b30–33 and *NE* 1180b7–29. For further discussion on the relevance of natural science for Aristotle's ethics see (Shields 2015; Leunissen 2015a). For an extensive study of the relevance of Aristotle's biology for his ethics see (Leunissen 2017).

⁴⁷ On the debate see *inter alia*, (Leunissen 2016; Harman 1999; Kamtekar 2004; Appiah 2008).

Acknowledgements

Thanks to Simona Aimar, Margaret Cameron, Ursula Coope, Pierre-Marie Morel, Jessica Moss, Eduardo Saldaña Piovchetti and Charlotte Witt for commenting on different drafts. Thanks to audiences and organizers of conferences in Cambridge, Banff and Geneva for their insightful comments and questions. Finally, I am immensely grateful to Julien Deonna, Fabrice Teroni and the Thumos Research Group for providing the best possible research conditions in Geneva, where this paper was written and revised.

Competing Interests

The author has no competing interests to declare.

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How to cite this article: Cagnoli Fiecconi, E. 2018. Enmattered Virtues. *Metaphysics*, 1(1): pp.63–74, DOI: <https://doi.org/10.5334/met.5>

Submitted: 20 February 2018 **Accepted:** 25 February 2018 **Published:** 21 May 2018

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