

# The Unity of the Human Soul: A Dimensional Reading of *DA* II.3

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## **ABSTRACT\***

This paper offers a new interpretation of the unity of the human soul's parts in *De Anima* II.3, drawing on the mathematical notion of dimension. Dimensionality, understood as an intrinsic property that parameterises a system's complexity by the number of its independent yet ordered parameters, provides a suitable framework for explaining the unity of the tripartite human soul. The nutritive, the perceptual, and the intellectual parts emerge as three definitionally distinct yet operationally ordered dimensions of a human being. Though anachronistic, this dimensional account is philosophically fruitful: it effectively unifies three structural features of the soul's parts – serial order, potential containment, and teleological subordination – identified in recent scholarship (Johansen 2012, 2014; Corcilius 2015, 2023, 2025).

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For us humans, the process of understanding naturally involves dimensional reduction. An essential hallmark of any good model is the compression of reality to its more “relevant” aspects.

Jean-Pierre Eckmann & Tsvi Tlusty  
(2021, 1)

Yet every reduction of dimensionality cuts something out. A statue of an elephant may be unmistakably recognizable, but it does not move. A two-dimensional projection still retains features that distinguish it from a comparable projection of a tiger or a woodshed, but it must not be viewed from too flat an angle. And in one-dimensional projection all distinctive features are lost: nothing remains but abutting line segments.

C. F. Hockett (1987, 10)

## — INTRODUCTION

The aim of this paper is not to offer a detailed commentary on Aristotle’s *DA* II.3, but rather to propose and justify a new interpretative framework for approaching the very problem of the unity of the parts – the faculties – of the human soul. I call this approach a dimensional reading. It is rooted in the modern mathematical notion of dimension – a broader and more flexible notion than that presupposed by classical geometry or mechanics – and I believe it provides a fruitful explanatory model for complex dynamic systems such as living species. My suggestion is that interpreting the unity of the parts of the human soul through this modern notion better fits Aristotle’s project of a science of living perishable things<sup>1</sup> – in

particular, its hylomorphic and dispositional commitments.<sup>1</sup>

The problem of the unity of the parts of the human soul is commonly expressed by the following question: How do the different parts – the various psychic faculties – constitute a single, unified soul? Yet even a minimal familiarity with Aristotle’s philosophy – above all with his hylomorphism – reveals that what appears to be a single question is in fact interwoven with two other questions, without which it cannot be answered. To ask how the parts of the soul form a unity is, first, to ask how those parts are related to one another. But to ask how the parts of the human soul – which is itself an inseparable part of the living human organism – form a

unity is, at the same time, to ask how the parts of the soul relate to the body and to the environment: how they are situated within it and how they interact with it. Thus, although these three questions<sup>2</sup> can be formulated independently, Aristotle’s conception of the soul makes it impossible to tackle any one of them without at the same time taking the others into account.<sup>3</sup> With this in mind I propose a dimensional reading in order to situate the unity problem within the very conceptual framework from which it arises, and to offer a way of integrating the three structural features of the soul’s parts identified in recent scholarship: serial order, potential containment, and teleological subordination/nesting.<sup>4</sup> I

1 In Aristotle’s *corpus* we can distinguish three different forms of life: (a) the life of the Prime Mover, whose life is pure activity of thinking; (b) the life of the celestial bodies, whose life consists of perfect – i.e. eternal – circular motion of bodies composed of imperishable matter; and finally (c) the life of perishable living things in the sublunary realm – that is, the life of organisms. Therefore, from now on, wherever Aristotle speaks of living perishable things, I will use the term “organisms”. For further discussion of forms of life that fall short of being ensouled, see, for example, Cohoe (2020). He rightly claims that the *DA* “does not, in fact, discuss all the beings that Aristotle takes to be living (ζωή), omitting the heavenly bodies, which Aristotle insists are alive, and the unmoved movers of *Meta. A*” (p. 284). Cohoe further clarifies: “Aristotle does think that ζωή, living, applies to the god and the heavenly bodies, but this term is not predicated univocally of the various living things and ζωή does not form an ordered series with a first member in the way that ψυχή does. Since ζωή is said primarily of the god, it is appropriate for Aristotle to leave inquiry into ζωή as a task for first philosophy. The science of the soul only covers sublunary living things” (p. 286).

2 Considering the hylomorphic framework of Aristotle’s thinking, we may discern that these three – the unity, interaction, and activity questions – constitute a single rope, as it were, spun from three distinct yet inseparable spindles.

3 Concerning the very possibility of addressing these questions in Aristotle’s philosophy individually, see e.g. Corcilius (2015). He distinguishes five different questions but responds to them in an interconnected manner. “How do the different faculties of the soul relate to each other? Aristotle raises this question himself. His answer, though far from satisfactory, is very interesting. It also provides a first approach towards answering the third question regarding the unity of the soul.” (2015, 41–49). For the modern debate about the possibility of keeping the problems of unity and interaction separate, see e.g. Boyle (2016, 550).

4 See Johansen (2012, 67–72, 278–283) and Corcilius (2015, 42–45; 2023, 119–136; 2025, 43). Both authors identify all three relations among the parts of the soul, even though they employ slightly different labels. Moreover, the very choice of labels already discloses the interconnectedness of these three relations. Thus, for instance, teleological *subordination* is grounded in the notion of a serial order, while *containment* points not only to

present this proposal in the conviction that, once understood in this way, the unity problem may be unravelled.

The structure of the paper reflects this aim. The first section outlines Aristotle's hylomorphism, dispositionalism, and explanatory strategies within his science of organisms, and explains why the human soul appears there as an internally structured explanans. The second section presents Aristotle's account of the three parts of the human soul and examines a geometrical analogy he employs to elucidate their unity. The third section highlights the limitations of an overly geometrical interpretation, which risks obscuring the hylomorphic, dispositional, and explanatory character of the soul, and prepares the ground for the dimensional reading of the unity problem. The fourth and final section considers the potential advantages of my proposal.<sup>5</sup>

one part's including another but also to the way in which the activation of a higher, later-developing part delimits the exercise of the capacities belonging to the lower part.

5 I am fully aware that my proposal rests on several presuppositions whose acceptance is anything but self-evident, and which cannot be justified in detail here. Yet should the reader be willing to concede them, she will find in return a useful tool by means of which the tightly interwoven triad of questions may be disentangled. It might also seem that the paper's architecture ought to be different: one should first offer a universal (and as neutral as possible) description of Aristotle's position, then provide a critical assessment of the main modern interpretations that continue to shape the debate, and only at the end advance one's own reading, together with an account of its advantages. This procedure, however, is not available here, for, as I have stressed, my proposal of a dimensional reading does not aspire to constitute a full-scale interpretation of the problem and therefore cannot function as an alternative

## 1. ARISTOTLE'S SCIENCE OF ORGANISMS AND ITS HYLOMORPHIC AND DISPOSITIONAL FRAMEWORK

One of Aristotle's major methodological innovations – in contrast to both Plato and the Hippocratic writers – was to extend dispositional analysis (that is, the analysis of processes in terms of *dunamis* and *energeia*) from the change of some X into Y also to the coming-to-be of X at all – that is, to the gradual temporal realisation of a species-form.<sup>6</sup> This innovation concerns natural bodies first and foremost. It is also bound to the thesis that every natural body has an ontological structure composed of matter and form. Later called hylomorphism, this view holds that matter and form are two aspects of a single unified natural body. Crucially, in real living bodies, matter and form are inseparable. They can be separated only by means of hylomorphic analysis – an abstraction we perform in thought. Aristotle emphatically rejects the independent subsistence of forms outside matter in the sublunary realm.

When Aristotle considers the essential forms of particular species of organisms in abstraction, they express what the natural bodies of that species are able to do and to undergo. This is precisely why Aristotle defines the soul as the first actuality of a natural body which has life

to the detailed and textually rich accounts offered by Johansen and Corcilius. Rather, it provides a framing approach intended to highlight that in engaging with these – and, indeed, with any – interpretations, we must keep in view the hylomorphic and dispositional background of Aristotle's philosophy. Moreover, to pursue that line would take us beyond the scope of the present paper.

6 See Corcilius (2015, 33–38).

in potentiality.<sup>7</sup> Hence, the fundamental capacities of a species – nutrition, perception, thinking – express what its members are capable of. They name the possibilities of its species-specific development – not mere logical possibilities, but real, guaranteed dispositions that become actual over time. We find the explicit application of hylomorphism to the science of organisms in *DA* II.1: *hylē* is the natural organic body potentially alive, and *morphē* is the soul as its first actuality.<sup>8</sup> A soul is always and necessarily embodied; a living body is always and necessarily ensouled. To think of a soul or body separately from the living substance is therefore to consider them as products of analysis – and to speak of them only in a derivative sense.<sup>9</sup>

I take Aristotle's *De anima* to be best understood as a prolegomenon to any future science of organisms – a theoretical groundwork for the systematic study of living perishable beings. In this science, it is the soul itself that functions as the

primary explanatory principle. What, then, is explained by the soul? In general, the soul explains the manifestations of organisms, namely: (a) the functional organisation of their bodies (*PA* I.1); (b) their inclinations and patterns of behaviour (*DA* I.5), and (c) those activities that belong jointly to the soul and body (*Sens* 1). This general account is further specified for the subset of animals in *Historia animalium* I.1, 488a7–19: “there are four groups of traits that animals possess *qua* animals: their functional body-parts (*merē*), their actions (*praxeis*), their ways of life (*bioi*), and their character traits (*ēthē*).” Although enumerated, these four domains are causally interconnected, forming a unified explanatory field.

Taken together, in Aristotle's science of organisms, the essential forms of particular species articulate what the natural bodies belonging to those species are capable of doing and undergoing. The fundamental capacities of living beings – nutrition, perception, and thought – are thus species-specific dispositions of the hylomorphic whole, the ensouled body, whose actualisation unfolds over time. Consequently, the soul is an explanans, and it is identical with its explanatorily relevant capacities – its faculties – even though the subject that bears and exercises these faculties is always the individual organism of the species. But it is crucial to clarify what it means to say that the soul itself is an explanans or an explanatory posit within the science of organisms.<sup>10</sup> This does not deny the

7 See *DA* II.1, 412a27–28: “διὸ ψυχὴ ἐστὶν ἐντελέχεια ἢ πρώτη σώματος φυσικοῦ δυνάμει ζωῆν ἔχοντος”.

8 A central feature of Aristotle's hylomorphism is developed in *DA* II.1 and II.2. But the basic idea that a certain kind of soul is the form of a certain kind of body is already stated in *DA* 407b23–26.

9 Corcilius (2015, 35) writes: “The only difference between general hylomorphism and its psychological application is that the essential form of living bodies is called soul, and the correlated matter is called living body (*DA* II 1, 412a11). This last point, that it is not the dead but the living body that is the matter of the soul, reminds us of the fact that the form/matter distinction is not a distinction between two physically distinct components of natural bodies, but between two ontological aspects of one and the same natural body.”

10 Corcilius (2025, 23) claims that the soul itself “is a scientific postulate, an artefact at the highest level of biological abstraction, more

existence of the soul; rather, it means that in this scientific project we abstract the soul from the manifestations of organisms and encapsulate it as that which functions as the formal, efficient, and final cause – that is, the explanatory principle – of their life activities.

In PA I.1, 639a15–22 Aristotle poses a methodological question crucial for the science of organisms. Should the scientist seek the explanatory essence for each species individually, or should he begin from what is common to several species – formulating concepts that are broader and explain more? Aristotle’s answer is clear. One should begin from a commensurately universal level – as general as possible and only as specific as necessary – so as to explain the common phenomena found across a maximally wide range of actually existing species.<sup>11</sup> The reasons are economical. Such a procedure prevents unnecessary repetition, minimises explanatory labour, maintains systematic order, and yields a hierarchical science. We begin from what is most general and proceed to what is more particular. Each explanandum thus receives its explanans in the proper place. To know something scientifically is to give a cause of it that is neither too general nor too specific.<sup>12</sup>

abstract than other and more familiar scientific abstractions of such a kind, as e.g. blooded or locomotive animals. However, in spite of being, from an ontological perspective, posterior to actually existing kinds of living things, it is definitionally and explanatorily prior to them.”

11 See also APo I.4, 73b25–74a3; I.5, 74a32–b3.

12 For a more detailed account of the nature of the scientific procedure, see Corcilius (2025, 32, n. 14).

Two important consequences follow.

(1) This method generates concepts – scientific posits – that easily tempt us to look for their supposed ontological correlates (for example, “the animal as such”). But in the real world there is room only for the souls of particular species as instantiated in individual organisms, not for general explanatory constructs mistakenly treated as existing entities. What exists is a range of concrete species (bees, horses, human beings), not a generic animal; and likewise, there are only species-specific actualisations of psychic faculties, not a generic faculty of perception. (2) Two different sets of species therefore emerge: those whose highest and final dispositional capacity is, for example, perception, and those that possess this same capacity together with an additional one – for instance rationality – to which the former is subordinated. In more complex species, an internal structure of the soul thus arises: an ordered series of explanatory faculties such that each later faculty presupposes its predecessor and, when followed by another, serves that successor.

## 2. THE PARTS OF THE SOUL, THE UNITY PROBLEM, AND ARISTOTLE’S GEOMETRICAL ANALOGY

Aristotle opens DA II.2 by identifying the soul as the explanatory principle of the science of all organisms (413a20–23). His first step is descriptive. Beginning from what organisms in fact do and undergo, he identifies four broad kinds of life activity through which the presence of the soul is manifested: nutrition (*kinesis kata*

*trophēn kai phthisis te kai auxēsis*), perception (*aisthēsis*), locomotion-and-rest (*kinesis kai stasis kata topon*), and thinking (*nous*).<sup>13</sup> These are not yet parts or faculties of the soul, but observable activities of organisms, and Aristotle treats them as the explananda. Since the soul is posited as the principle responsible for these activities (413b11–13), he then argues that it must possess distinct faculties (*dynamēis*) corresponding to the kinds of activity it explains.

However, the mapping between activities and faculties is not one-to-one. Although there are four observable activities, there are only three principles – active powers – that account for them: the nutritive faculty (*to threptikon*), the perceptual faculty (*to aisthētikon*), and the faculty for thinking (*to dianoētikon*). As the Greek terminology already suggests – note the absence of the suffix *-ikos* in the case of *kinesis* – locomotion does not correspond to a basic faculty. It is not grounded in a distinct psychic principle but is produced and/or coordinated chiefly by the operation of the perceptual and the thinking faculties.<sup>14</sup> Hence Aristotle aims to identify the minimal set of explanatory principles sufficient to

account for the characteristic activities manifested across the full range of species. The distinction between capacities and faculties is essential here: capacities are the wide array of life activities observed across organisms; faculties are the minimal explanatory structures without which those capacities could not be scientifically understood.<sup>15</sup>

This yields an important methodological consequence. The three faculties identified by Aristotle – the nutritive, the perceptual, and the intellectual – constitute a general explanatory model, not three separate entities. Although they are defined separately, from a hylo-morphic and dispositional perspective they constitute a hierarchically ordered sequence of active powers.<sup>16</sup> The model is thus unified and hierarchically ordered: later faculties presuppose the earlier ones in the order of explanation. This hierarchical structure makes it possible to explain the life activities of organisms of various degrees of complexity by means

13 See *DA* II.2, 413a23–25.

14 According to Aristotle (especially *DA* III.10, 433a23–26; 433b5–9, but also *MA* 6–7, 699b34–701a6), desire (*orexis*) is the final cause of locomotion and of the life activity of all kinds of animals. In some species, desire is the expression of their immediate or experience-based appetitiveness (*epithumia*) and is to be explained with reference to the faculty of perception; in others, it is the expression of a rational wish (*boulēsis*) and is to be explained with reference to the faculty of thinking. For a more detailed account see Pearson (2012).

15 Corcilius & Gregoric (2010) justify this interpretation and show that the narrative taking “parts of the soul” as a mere mode of parlance equivalent to speaking of “capacities” of the soul misses a basic structuring distinction in Aristotle’s thinking about the soul.

16 See also Corcilius (2023, 111–115). He writes: “In his *De anima*, Aristotle is committed to both of the following claims: (i) each of the parts of the soul can be defined separately from the other parts, and (ii) the parts jointly constitute the explanatory essence of living things. Thus, some sort of talk of addition of parts does apply to Aristotle’s conception of parts of the soul. This is why *De anima* II 3 explicitly recommends defining the soul as the explanatory principle of the science of living things by going through the series of the definitions of the parts in turn, i.e. by defining each part separately.” (p. 111)

of a minimal sequence<sup>17</sup> of faculties. A species whose activities consist only of nutrition, growth, decay, and reproduction can be fully explained through the nutritive faculty alone. A species that is also capable of perception requires both the nutritive and the perceptual faculties. And a human being – whose characteristic activities include intellectual operations such as calculation, reasoning, and deliberation – requires all three faculties in order to be fully described and explained.

Aristotle defines all three faculties explicitly. The nutritive faculty is the capacity that preserves the thing which possesses it (416b17–20).<sup>18</sup> In nourishment, there is an uptake of the matter-of-environment into the matter-of-organism; for example, we take in nutrients from food, and this keeps our bodies alive. The perceptual faculty is defined as the capacity to receive perceptible forms without their matter (424a17–24).<sup>19</sup> This faculty accounts for the transmission of forms from the environment to the organism without matter, and it enables certain species to navigate through their surroundings, thereby allowing them to move from place to place.<sup>20</sup> Finally,

the intellectual faculty is the capacity to receive intelligible forms – essences – and to operate upon them in inference (429a10).<sup>21</sup> But how do these different parts – these distinct faculties – constitute a single soul? Even before providing the above-mentioned definitions of these parts, Aristotle formulates the question of their unity and addresses it by means of a famous geometrical analogy.

It is clear, then, that in the same way there could be one account for both soul and figure. For in the one case a figure is nothing beyond a triangle and the others following in a series, and in the other a soul is nothing beyond the things mentioned. There could, however, in the case of figures be a common account which fits them

transduction and ratios, Caston offers an exceptionally compelling account of how forms are transmitted in the process of perception. He writes that our senses “receive the form in question by embodying and replicating certain features that are essential to the active quality, specifically the ratios Aristotle thinks define perceptible qualities, and thereby receive information about the perceptible object” (p. 15; see also pp. 28–37).

21 Thinking is the activity of grasping or processing intelligible forms. But, for reason to take any form, it must not itself be of any form. This is why Aristotle thinks of reason as a pure capacity (*dunamis*) of receiving and combining any set of forms that are not intrinsically contradictory (DA 429a18–21). Therefore, Aristotle claims of reason that nothing is its nature except being potential (*hoti dunaton*) (DA 429a22–23). Unless reason thinks, it is nothing. When it thinks, it is what it thinks. It is in this spirit that Aristotle’s statements about reason as potentiality (*dunamis*), as the locus of forms (*topon eidon*), and as that which become all (*panta ginesthai*) must be understood. Thus, the intellectual faculty not only has no bodily organ but is itself nothing but what it just performs.

17 I intentionally avoid the term *set*, because – unlike a serial order – it does not, by definition, require a fixed ordering of its elements.

18 DA II.4, 416b17–20: ὡσθ’ ἡ μὲν τοιαύτη τῆς ψυχῆς ἀρχὴ δύναμις ἐστὶν ὅλα σώζειν τὸ ἔχον αὐτὴν ἢ τοιοῦτον, ἡ δὲ τροφή παρασκευάζει ἐνεργεῖν. διὸ στερηθὲν τροφῆς οὐ δύναται εἶναι.

19 DA II.12, 424a18–19: ἡ αἴσθησις ἐστὶ τὸ δεκτικὸν τῶν αἰσθητῶν εἰδῶν ἄνευ τῆς ὕλης

20 One of the most recent and most comprehensive accounts of perception can be found in Caston (2020). Drawing on the notions of

all, though it will be peculiar to none; and the same holds in the case of the souls mentioned. For this reason, it is ludicrous to seek a common account in these cases, or in other cases, an account which is not peculiar to anything which exists, and which does not correspond to any proper and indivisible species, while neglecting what is of this sort. Consequently, one must ask individually what the soul of each is, for example, what the soul of a plant is, and what the soul of a man or a beast is. What holds in the case of the soul is very close to what holds concerning figures: for in the case of both figures and ensouled things, what is prior is always present potentially in what follows in a series – for example, the triangle in the square, and the nutritive faculty in the perceptual faculty. One must investigate the reason why they are thus in a series. For the perceptual faculty is not without the nutritive, though the nutritive faculty is separated from the perceptual in plants.

DA II.3, 414b20–415a3, tr. Shields (2016, 27–28)

Just as there is no geometrical object called simply “figure”<sup>22</sup> in existence apart from specific figures such as triangles, squares, or pentagons, so too there is no entity called “the soul itself” existing over and above the particular kinds of souls instantiated in individual species of organisms (*kath’ hekaston*). The ontological point is thus clear. To

be a form is to be a determinate form. In geometry, to be a closed plane figure is to be a figure of a specific kind – a triangle, a quadrilateral, a pentagon, and so on. And likewise in the science of organisms: to be a soul is to be the soul of a particular species.

Indeed, we can construct a general concept whose extension includes all closed plane figures – for example, a polygon. Such a concept is explanatorily useful; nevertheless, it is not a first-order geometrical object, but rather a product of abstraction and generalisation adopted for the sake of explanatory economy. In this respect, a polygon plays a role analogous to that of the soul itself in the science of organisms. The geometrical analogy thus clarifies the ontological dimension of the issue: there exist only individual instances of particular kinds of organisms (e.g. horses, humans), and the corresponding kinds of souls exist only as integral aspects of the living composites – separable in thought solely as the result of hylomorphic analysis.

Let us now turn to the way in which these three parts of the soul are related to one another and thereby form a unity. Interpreters working on the unity problem generally agree that three characteristics clarify how the three faculties of the human soul form a single, explanatorily ordered whole: serial order, potential containment or inclusion, and teleological subordination or nesting.<sup>23</sup>

Although not always explicitly highlighted, the serial order of the faculties

22 It is meant to be a closed plane figure. See Polansky (2007, 194–195) or Shields (2016, 266).

23 See Johansen (2012, 67–72, 278–283) and Corcilius (2015, 42–45; 2023, 119–136; 2024, 43).

follows naturally from the explanatory logic of Aristotle's science of living beings. The explanatory sequence begins with the most fundamental part – the faculty responsible for the self-preservation of an organism. Additional faculties are introduced only when required to explain further life activities that cannot be accounted for by the lower faculty alone. The resulting sequence is therefore generated not arbitrarily but by explanatory necessity, and it yields a progressively layered structure reflecting the increasing complexity of the activities to be explained.

Something that is closely connected with this is the idea of potential containment. The lower and more basic faculties are present within the higher ones only potentially, not actually. This means that the activities of the lower faculties remain discernible within those of the higher solely as operative conditions, not as independently exercised powers. For a higher faculty to be actualised, the lower faculties must be concurrently active – either as ongoing processes or at least in the form of the outputs of those processes. Simply put, what does not live cannot perceive or move from place to place; and what neither perceives nor imagines cannot abstract or withdraw from its own representations. In this sense, each higher faculty contains the lower as a constitutive prerequisite, while nevertheless remaining functionally and explanatorily distinct from it.

Finally, the series exhibits teleological subordination. The lower faculties do not merely precede the higher in the order of explanation; they also exist for the

sake of the higher. Their activities are organised towards ends that are completed and perfected by the higher faculties. Thus, the nutritive capacity sustains the perceptual life of animals, and the perceptual capacity provides the cognitive preconditions necessary for the actualisation of intellect in human beings. Teleological subordination therefore shows that the unity of the soul is not merely sequential or structural, but purposive as well: the activities of the lower powers contribute to, and are integrated within, the finality realised by the higher.

Taken together, these three characteristics – serial order, potential containment, and teleological subordination – offer a coherent account of how the three faculties jointly constitute a unified explanatory model of the human soul.

### — 3. BEYOND THE GEOMETRICAL ANALOGY: TOWARDS A DIMENSIONAL READING

Even while acknowledging the genuine insights yielded by the geometrical analogy, I believe that if we do not allow ourselves to be overly constrained by it and instead turn to the modern notion of dimension, we gain a more appropriate instrument for articulating the unity and the relations among the parts of the soul – one capable of integrating the three characteristics just identified and of making explicit the dynamism and temporality inherent in Aristotle's hylomorphic and dispositional framework.

The geometrical analogy, after all, exhibits two significant limitations. First, it is *static*. It presents a sequence of timeless geometrical objects and

thus cannot capture the becoming of a determinate form – the ontogenetic, temporal, and causal realisation that is, for Aristotle, essential to the life of organisms. Second, it is *single-levelled*. It offers a flat series of shapes within a single plane, whereas Aristotle’s explanatory hierarchy concerns different levels of being – plants, non-human animals, and human beings – and the explanation of each of these levels requires a distinct degree of complexity in the explanatory model, consisting of a different number of explanatory parameters. The analogy thus fails to show that what is at stake is not merely the accumulation of additional faculties but a transition to higher and categorically different levels of psychical organisation. Let me therefore turn to the modern notion of dimension.

Following Eckmann & Tlusty (2021, 1), we may understand dimension as “the number of independent parameters required to fully describe a system”. Each dimension names a distinct mode of possible operation of a system. The more dimensions a system possesses, the greater its potential range of behaviour and the greater its complexity and non-linearity across time. Importantly, this modern notion is inherently dynamic. Living systems, unlike non-living ones, generate and (re)organise their dimensions over time through feedback. A living organism is thus a system that creates, maintains, and even transforms its own dimensionality.<sup>24</sup>

24 For a systematic organisational account of living systems in terms of closure of constraints, formal causation and teleology – explicitly framed as biological autonomy – see

Concerning the relations among dimensions, the simplest way to understand the relation among dimensions is to imagine the gradual expansion of a space by a new direction, that is, “building dimensions upon one another”. Each new dimension arises by *adding* one independent direction to the original dimension, and this new direction is independent in the sense that it cannot be expressed as a combination of the preceding dimensions. The relation among the dimensions of a single system is recursive. Each dimension is an “envelope” of a lower one. From the topological point of view, each lower dimension is a subspace of a higher dimension (embedding) and it can be said that each lower dimension is thus the shadow of the higher. For example, a line “fits” into a plane, a plane “fits” into space, etc. At the same time, it holds that each dimension contains all the preceding ones. Dimensions thus form a hierarchy: each higher dimension contains the lower only as special cases but has new relations that have no meaning in the lower dimensions. We can therefore conclude that the number

Moreno & Mossio (2015). They describe living organisms as organised systems which are able to self-maintain as integrated entities, to establish their own goals and norms, and to promote the conditions of their existence through their interactions with the environment. The topics covered in this book include organisation and biological emergence, organisms, agency, levels of autonomy, cognition, and a look at the historical dimension of autonomy. While the Aristotelian vocabulary may not be front-and-centre everywhere, the philosophical lineage is clearly present – it is part of the move to re-insert notions of organisation, function, purpose, and self-maintenance into biology, in contrast to purely mechanistic accounts.

of dimensions expresses the degree of freedom of movement, or rather the possibilities of realisation of a system.

I think it is already clear why I propose to use the modern concept of dimension in the interpretation of the problem of unity. If we apply it to Aristotle's account of the complexity of the human soul, we obtain the following picture. The three parts of the human soul – the nutritive, the perceptual, and the intellectual – form an ordered set of three definitionally separate yet operationally unidirectionally conditioned dimensions, that is, psychic faculties that fully account for the range of human psychophysical manifestations. In Aristotle's view the higher parts of the human soul, the perceptive and the intellectual, provide the possibility of a double liberation in relation to the nutritive part. In the first stage, man is in thrall to the necessity of natural life. He is dependent on the immediate environment and receives it by material exchange. In the second stage, by virtue of his perceptive faculty, he moves in search of what he needs. He is able to maintain representations of the goals of his natural development and preserve what Mother Nature (and/or his community) has designated as his own good. And in the third, rational stage, he moves away from the motivational-desiderative framework of the first two dimensions by being able to reflect on what he should be moving towards. Thus, he gains a distance from his animality by participating in the activity of thinking. Each dimension is an irreplaceable explanatory element of the overall explanatory model, which

serves to describe the diverse behavioural manifestations of a member of the human species. D1 describes the basic fact of life that occurs as a result of the material interaction of the organism with its environment. The operational autonomy of D1 is evidenced by the possibility of a vegetative state of man, and the operational autonomy of D2 and the operational additionality of D3 are in turn evidenced by the fact that an organism of the human species must first be informed, i.e. must perceptually grasp certain features of the environment in order to be able to additionally process them with reason.

I propose to understand the three faculties of the human soul as degrees of freedom that enable us to articulate fully the behavioural possibilities and characteristic modes of life of our species. The first is nutritive movement, understood as a form of liberation within the environment: growth and reproduction conceived as a kind of movement in place. The second is perception-based locomotion, understood as liberation from the immediacy of the environment: movement from place to place, fuelled by the pursuit of perceived and/or imagined goods and by the avoidance of perceived and/or imagined harmful things. And finally, the third is intellection, understood as liberation above both the environment and the sphere of subjective desires and representations: the activity of the intellect, the self-determining orientation towards objective goods.<sup>25</sup>

25 See also Corcilius (2023, 134–135): "Aristotle is no doubt firmly committed to the thesis that the perceptual and nutritive parts of

Hence, I propose to understand “dimensions” as parameters of a dynamic system. Dimensions help us to fully describe the human being in terms of its distinctive forms of motion – that is, forms of liberation: beginning with movement in place, proceeding to movement through space, and culminating in movement above the subjective sphere, oriented towards the realm of values such as truth, justice, and the common good.

#### — 4. THE EXPLANATORY YIELD OF A DIMENSIONAL READING

The questions concerning unity and the interrelations among the parts of the human soul are notoriously difficult. But if we acknowledge the dispositionalist framework of Aristotle’s science of organisms – which conceives of the human being as an organism that, like any other specimen of a natural kind, gradually actualises its specific form – and if we pay attention to Aristotle’s hylomorphic claim that the human soul is realised through the body, thereby conferring upon it its species-specific functional organisation, characteristic capacities, behavioural possibilities, and mode of life, then our chances of grasping the problem of the unity of the soul correctly increase significantly. To ask how the parts of the human soul constitute a unity is, in effect, to ask how the parts of a complex explanatory model – constructed to account for the manifold

*the human soul are teleologically subordinated to the rational part. He says so many times. He is also committed to the thesis that from a normative perspective rational goals should be a *per se* cause of human action (as opposed to animal self-motion).”*

capacities and manifestations distinctive of our species – can themselves form a unified whole. The straightforward answer is: by being parts of one and the same bearer.

Why, then, must this explanatory model be internally articulated, i.e. composed of three definitionally distinct and mutually irreducible, yet asymmetrically existentially dependent parameters? Because it must account adequately for the empirical regularities of the tensions within our life, tensions rooted in the fact that multiple, sometimes contrary, motivational powers operate within us. We are daily witnesses to psychophysical impulses (for example, sexual appetite or reflexive avoidance of what is painful or aversive) coming into conflict with what reason counsels – rational considerations that take into account future goods, the good of the whole, or justice, goods not confined to the agent’s immediate subjective perspective. The phenomenon of asthenic akrasia is paradigmatic in this respect. And it is precisely for these explanatory purposes that Aristotle introduces an internally structured scheme consisting of three fundamental and mutually irreducible parts.

The problem of unity is thus inseparable from the problem of interaction. To inquire how the parts of the human soul interact is analogous to asking how the distinct dimensions of a given system relate to one another. They do so as a serially ordered sequence. As we have already noted, the dimensionality of a system is expressed by the number of independent yet hierarchically ordered parameters it comprises. Consequently,

the parts of the soul – and, by analogy, the dimensions of a dynamically developing entity – stand in relations that are (1) sequential, (2) such that the acts of the higher depend existentially on the acts of the lower, which are “absorbed” into the higher,<sup>26</sup> and (3) teleological, such that the lower are subordinated to the end actualised by the highest part or ultimate dimension. Crucially, however, the lower components retain the possibility of operating independently of the higher whenever the latter are, for whatever reason, not initiated or actualised.<sup>27</sup>

I am convinced that approaching the problem of unity through a dimensional reading (henceforth DR) offers several advantages, especially when compared with interpretations that rely on analogies between the parts of the soul and geometrical objects confined to a plane. The contemporary mathematical notion of dimension – conceiving of dimensionality as the number of degrees of freedom an entity possesses – is sufficiently broad to encompass not only timeless geometrical forms but also dynamically developing entities. This makes it particularly suitable for capturing the subject matter of Aristotle’s science of living perishable things. Organisms are living

bodies precisely because they contain within themselves the principle (*archē*) of motion and change.<sup>28</sup> Organisms unfold their development through the gradual actualisation of species-guaranteed capacities. Every (human) individual progressively actualises dispositions specific to the species, and this actualisation is not merely brought about by the passage of time but also presupposes an active stance that manifests on three distinct levels: by ingesting food; by pursuing what is pleasant and avoiding what is harmful, and finally, by undergoing upbringing and education.

Moreover, the contemporary mathematical concept of dimension has the significant advantage that – unlike the concept of “soul” – it is not burdened by two millennia of interpretations portraying the soul as the bearer or possessor of psychic faculties (the Platonising reading of Aristotle), as a subsistent entity (the Arab-Thomistic tradition), or as something akin to eternal geometrical objects. Employing the modern concept thus allows us to make clear both (a) that dimensions are always dimensions of something (the soul is always the soul of a determinate kind of organism), and (b) that the bearers of dimensions are

26 Potentially contained within them, as *phantasia* is contained within *noēsis*, or matter within sensible form.

27 Such a condition may arise from insufficient nutrition, from excessively weak or excessively strong environmental stimuli, from a perverted upbringing, from a lack of self-discipline, or even only temporarily – for instance as a result of illness, intoxication, or countless other factors that may be either external or internal to the subject.

28 In contrast to the zero-dimensionality of non-living natural bodies and artefacts, this is the first dimension of organisms. Aristotle maintains that everything ensouled is capable of movement and is itself the source of both its motion and its rest. Plants, however, exhibit only one kind of movement – nutritive movement, the kind involved in growth and decline. Animals additionally possess the capacity for locomotion, and human beings can further direct both of these kinds of movement in accordance with the ends set by the motion of reason. See DA II.1, 412b15–18.

not abstract objects but dynamically developing entities that progressively actualise their species form.

This is precisely the point at which DR enjoys a major advantage over readings grounded in analogies with geometrical forms – readings in which the dynamism involved in the constructive unfolding of individual figures is obscured, as once a geometrical figure is opened up, it ceases to be what it was and becomes something different – a figure of a different kind. A further disadvantage of any purely “geometrical reading” is that a series of figures lying on the same plane (i.e. within two-dimensional space) hardly conveys the idea of the subject’s liberation through the acquisition of an additional capacity. DR, by contrast, allows us to demonstrate elegantly that adding a new parameter to a subject that has already actualised some of its dispositions radically expands the range of possible actualisations, even as it simultaneously increases the potential for internal tensions or conflicts.

Additionally, DR smoothly integrates all three of the currently proposed systematic accounts of the relations among the soul’s parts that secure their unity, while also offering further advantages in comparison with established interpretations.<sup>29</sup>

29 It remains true, as footnotes 4 and 23 have already indicated, that the three interpretations discussed below – those of Shields, Johansen, and Corcilius – offer detailed and comprehensive treatments of the unity problem and converge on the same three relational parameters: serial order, potential containment, and teleological subordination.

In comparison with Christopher Shields, who speaks in terms of the removal of the higher dimensions,<sup>30</sup> the DR proposal does not treat the absence of higher dimensions as a removal, but rather as the non-actualisation of a higher dimension or dispositional property that is nevertheless species-guaranteed within Aristotle’s framework. As in the case of geometrical objects, a dimension is fixed by the conditions of construction. A dimension or disposition cannot simply be removed without thereby destroying the very subject to which it belongs. It may, however, remain unused or unexercised. We cannot remove a dimension from a cube without ceasing to have a cube. Analogously, we cannot remove the disposition for thinking from a human being without ceasing to speak of a human being. We can, however, readily note that a three-dimensional system need not exercise a given degree of freedom – i.e. it need not actualise or manifest it.

Compared with Johansen’s proposal, which models the potential containment of the lower parts by the higher on the analogy of letters embedded in more complex words,<sup>31</sup> DR avoids the difficulties inherent in the very medium of writing. Johansen’s analogy misses the mark because written letters persist as actually present constituents of the word; on this model, the soul’s parts would remain actually present and overtly traceable

30 And, thereby, in my view, losing sight of their necessary, species-guaranteed presence. See Shields (2016, 197).

31 See Johansen (2012, 49–50).

as internal, unchanged constituents of the unified whole.<sup>32</sup> DR improves upon Johansen's word-letter analogy by showing that the higher dimension – a higher degree of freedom – simply would not exist without the lower, and yet the presence of the lower is no longer straightforwardly visible. For instance, thinking no longer displays the experiential richness and subjectivity of the images from which we abstract the fundamental constituents of thought.

As for Corcilius's interpretation (2015, 2023, 2025), the initial version of DR that I propose does not match the subtlety or systematic breadth of his analysis. Nonetheless, I hope it helps bring out the correctness and accuracy of his interpretation by making clearly intelligible the crucial distinction between what he calls natural and non-natural teleology and the teleological subordination of the lower parts of the soul to the higher in these two distinct frameworks.<sup>33</sup> DR entails that the third dimension of the human organism makes possible a radical emancipation from the "programme" of its nature.<sup>34</sup> Our third dimension allows us to step back both from the aim of self-preservation and from subjective natural teleology (which, according to Corcilius, is embedded within objective natural

teleology) that consists of actively pursuing and satisfying species-given goods as affectively represented. This emancipation is made possible by something that only the third dimension can both formulate and form: the capacity for normative thinking. Through normativity – especially as manifested in linguistic practice – we can step back from our nature and desires towards what is objectively and truly good.<sup>35</sup>

Finally, by preserving both the idea of capacities added in a serial order and the idea of transformation, DR contains the potential for a certain reconciliation in the debate between additivists and transformativists.<sup>36</sup>

## — CONCLUSION

Aristotle's dispositionalism holds that belonging to a species – for example, the human species – consists of possessing species-specific capacities that are ordered towards their appropriate actualisations. Species membership entails a developmental programme that unfolds over time and requires the active participation of the subject, the bearer of the soul. To belong to a species is therefore to possess the potential to actualise, in due course, the full range of its characteristic dispositions. Even when the

32 This problem could be mitigated by shifting the analogy to spoken language, where letters do not endure – yet even then, additional disadvantages would arise that I cannot discuss here.

33 See Corcilius (2023, 121–136).

34 In Corcilius's terms – from objective natural teleology.

35 In Corcilius's terms, the level of non-natural teleology liberates us from our nature and desires in favour of rational grounds.

36 However, DR does so without treating the process of transformation as necessary. For discussion of whether the relation between the perceptual and rational parts of the soul in Aristotle should be understood in an additive or a transformative way, see e.g. Glock (2019); Christofidou (2021); Corcilius (2023).

higher capacities are not fully actualised,<sup>37</sup> the lower ones remain operative.<sup>38</sup>

To have a human soul thus means not only to live in a place, nor merely being informed about features of one's environment and navigating it through perception and desire, it also means possessing the capacity for thought: the ability to reflect upon, determine, strategically plan, and realise one's ends, thereby becoming the architect of one's own life. The three parts of the human soul are therefore three irreducible and mutually irreplaceable parameters of an explanatory model that accounts for the full range of behavioural possibilities and structural properties characteristic of our species.

Why, then, should we apply the seemingly anachronistic concept of dimensionality<sup>39</sup> rather than Aristotle's own static geometrical series to the question of unity? Simply because dimensionality captures more adequately the hylomorphic and dispositional logic that underlies Aristotle's science of living beings. A dimensional reading better fulfils Aristotle's explanatory aims. It preserves the hierarchy, dynamism, and temporality that the static geometrical model lacks. I do not claim that Aristotle anticipated the modern concept of dimensionality; I claim only that, had he possessed it, it would have served his philosophical purposes with remarkable precision.

37 Or, for some reason, cannot be actualised.

38 *Contra* strong transformativist accounts of the parts of the soul in Aristotle see e.g. Christofidou (2021, 217) and Corcilius (2023, 113–119).

39 The question whether the notion of dimensionality that I propose to employ in approaching the unity problem is anachronistic is admittedly delicate. In outline, however, the answer is straightforward. Aristotle clearly operates with a notion of dimensionality in the strict sense of the number of extensions and of the corresponding modes of divisibility of a continuous magnitude (e.g. DC I.1, 268a7ff.; Met. V.13, 1020a11–14; Cat. 6, 4b20–24). There are three διαστάσεις (diastaseis). However, it is equally clear that this notion overlaps only partially with the modern concept. For Aristotle, all three dimensions are properties of physical substances qua physical bodies, and in that Aristotelian guise the notion is not, as such, suited to serve as a description of the parts of the soul. Moreover, in Aristotle's philosophy, the relevant genus is μέγεθος (megethos), so that 'dimensions' mark the ways in which a magnitude is extended in one, two, or three directions. By contrast, the modern notion of dimensionality is detached from bodily magnitude and treated as a more general and formal parameter – roughly, the number of degrees of freedom that structure a space of possible states or behaviours, including those of living systems. For discussion of Aristotle's notion of dimensionality, see Whitrow (1955) or Pfeiffer (2018).

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