Plato on Physical Reality
The Timaean Metaphysics as an instance of a Platonic Cosmological Power-qualityism

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Plato on Physical Reality

The Timaean Metaphysics as an instance of a *Platonic Cosmological Power-qualityism*

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Abstract

In my dissertation, I shall attempt to provide a novel reading of two central aspects of the metaphysical outlook of Plato’s *Timaeus*, namely the mereology and the metaphysics of properties — to answer the question of what is fundamental and how the fundamental entities in the Timaean Cosmos are. This will be carried out through a certain hybrid methodology, which both relies on a cautious reading of the Platonic text, but also promotes an open-minded confrontation with some of the newest proposals in contemporary metaphysics (most notably, *Existence and Priority monism*, *Dispositionalism*, and the *Powerful Qualities View*). The objective of my research is thus to provide an innovative (as it makes use of newly discovered metaphysical tools), yet legitimate (as it is firmly grounded in a careful analysis of the original text), interpretation of the Timaean metaphysical outlook.

In the first chapter, I shall focus on the mereological structure of the Timaean Cosmos. More in detail, I will consider the Demiurgic construction of the World Body (31b4–32c4) and of the elemental bodies (53c–55c), and provide a reading of the composition of the Cosmos such that there is only one basic entity (conceived of as the ultimate structure), on which all other entities a-symmetrically depend (according to a downward metaphysical necessitation), with structure going all the way down — a view which might be seen as an instance of *Priority monism*.

In the second chapter, I will address the nature of the (elemental) properties. To this extent, I shall isolate the ontological category under which they fall (49b7–e7) and then study the metaphysical profile that the elements exhibit (51a4–b6, 53a9–b5, 55d6–56b6, 56d1–56e7). Thus, I shall hold that the elemental properties present two fundamental yet distinct aspects (which are nothing over and above the overall property), one of which is eminently qualitative (and grounds the phenomenal appearance of the observable world), and the other which is purely structural (and accounts for the nomic relations that preside over the causal functioning of the Cosmos) — a view which might be seen as a version of the *Powerful Qualities View*.

Finally, in the last chapter, I will first outline and briefly discuss the overall view that I attribute to Plato in the *Timaeus*, and I shall then consider two main virtues that I believe my account entails: the first one concerns the capacity of Plato’s account (if read under my proposed interpretation) to answer the Zenonian concern for infinite divisibility in an elegant and metaphysically parsimonious way; while the second one addresses what I call the ‘Recognition problem’ of human perception, which my view has the resources to do away with (without postulating ad hoc Forms or invoking the mechanism of anamnesis).

In sum, I believe my research may essentially be seen as an attempt to both access the depth of the Timaean proposal through the novelty of the modern metaphysical discourse, and to show the novelty of the Timaean metaphysics as a proposal within the contemporary debate.
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I. Introduction

With its core of no more than sixty-five pages, Plato’s *Timaeus* qualifies as one of the most influential and omni-comprehensive pieces of literature of the entire Western canon. The work does not only offer a detailed account of the ‘furniture of the universe’, but delves deep into metaphysical, physical, epistemological, psychological, astronomical, and theological matters. Amongst all others, there is one aspect of such a *polytropic* dialogue that stands out as particularly salient: in the *Timaeus*, Plato raised the *right questions* concerning the nature and structure of the physical Cosmos — as Nobel Laureate for Physics, Sir Anthony Leggett, puts it (2010: 31). This is, of course, no news: it is well documented how the *Timaeus* almost single-handedly determined a true *renaissance* of the study of nature during the Middle Ages (cf. Burtt 2003: 53). However, the influence of Plato’s pioneering project was not extinguished then. Rather, the Timaean metaphysical proposal seems to be more relevant now than ever. Indeed, classical scholarship has recently seen a growing interest in the dialogue, and especially in the picture of physical reality that is therein presented (cf., e.g., Miller 2003, Johansen 2004, Broadie 2012).

This being said, a certain renewed interest in the study of our metaphysical story of the natural world has reached beyond the sub-field of Ancient Philosophy, establishing itself as a central point of debate in the contemporary discipline at large. In this direction, in the past few years, the analytical circles have been witnessing a revived enthusiasm for notions such as *fundamentality*, *grounding*, and *priority* — and, more in general, for the enquiry about the metaphysical scaffolding that lies behind our familiar world of sensibles (cf., e.g., Fine 2001; Schaffer 2003; Chalmers, Manley, & Wasserman 2009; Peramatzis 2011; Sider 2011).

Now, the present work takes inspiration from both the renewed interest in the *Timaeus’* natural philosophy and the re-found sense of urgency for the search of the fundamental structure of physical reality. Thus, the main objective of my thesis will be providing a novel, unified account of two central aspects of the Timaean metaphysical outlook, namely the *mereology* and the *metaphysics of properties* — to answer the question of *what* is fundamental and *how* the fundamental entities are in the Timaean Cosmos. In this sense, the upshot of my research
is two-fold, both interpretative and conceptual: to access the depth of the Timaean proposal through the novelty of the modern metaphysical discourse, and to show the novelty of the Timaean metaphysics as a proposal within the contemporary debate.

Before moving on to the text, I ought to conduct some preliminary specifications concerning the object, scope, and methodology of my research.

First and foremost, I need to clarify the object of my research. In my investigation of the Timaeus, I will be focussing primarily on the accounts of mereology and of the metaphysics of properties that are put forth in the dialogue. Let us consider mereology first. Traditionally, the question of what is ‘fundamental’ has been treated as indissolubly entwined with the question of ‘what things there are’ (i.e., ontology), such that the enquiry on fundamentality may be seen as the search for ‘what ultimately there is’ (i.e., “the Aristotelian View”, Schaffer 2009: 351). Within such a general approach to metaphysics, I believe one interesting way of characterising the questions of ontology (i.e., ‘what is there?’) and fundamentality (i.e., ‘what is there ultimately?’) would be to study the mereological relationships between parts and wholes (cf., e.g., Newlands 2010). In light of such an understanding of mereology, then, the question of fundamentality becomes the question of ‘what is prior’ and, thus, of which entities are basic (cf. Schaffer 2010a). Let us now turn to my preferred understanding of the metaphysics of properties. I take ‘properties’, quite simply, to be entities which are predicated of things, such that they capture and describe the ways things are (cf. Loux 1972; Oliver 1996; Mellor and Oliver 1997; Allen 2016; Koons and Pickavance 2017; Marmodoro and Mayr 2019). Thus, if fundamental mereology is the discipline that studies the question of ‘what is basic’, then the metaphysics of properties studies ‘how many and which ways the basic things are’ — that is, it aims at explaining the nature of the properties that are instantiated at the fundamental level of reality (as they are borne by the fundamental entities). One final note before moving on. Even though I shall address the two chosen ‘sides’ of the Timaean metaphysics (namely, the mereology and the metaphysics of properties) separately, these should not be considered disconnected views. Indeed, what I aim to provide with my work is a unified account of the Timaean metaphysical outlook, where the two individual views which I shall attribute to Plato in Chapter II and in Chapter III, respectively, are to be seen as integral parts of the overall account.¹

¹ For the purposes of my work, I shall treat Timaeus’ theory as endorsed by Plato, even though I am aware that this should not be taken for granted and would need separate defence (cf. Cooper 1997: xxi; Broadie 2012: 2) — for opposing views on the matter see Taylor (1928: 10–11, 17–19) and Cornford (1933: vi–ix).
Secondly, I need to set the scope of my research. In my investigation of the *Timaeus*, I am only concerned with the study of the ‘physical reality’. In this respect, my reading will hang on the assumption that the Forms and the Demiurge are not to be considered parts of the physical reality. Indeed, I take the physical reality to be limited to the already-generated, self-sufficient observable world of sensibles. Now, Broadie (2015) argues that, in the *Timaeus*, Plato postulates a radical metaphysical separation between the intelligent cause (which is deemed immaterial), the pre-existing material (*chōra*), and the final product (i.e., the Cosmos). In my investigation, I shall acknowledge Broadie’s view and maintain that this does not affect my research. Indeed, even though they remain the paradigmatic and efficient causes of the Cosmos (cf. Ferrari 2003), the *transcendent* Forms and divine craftsman are not directly involved in the ordinary functioning of the universe (cf. Betegh 2018: 122). Thus, Broadie’s strict metaphysical separation may be seen to go precisely in the direction of my claim that the Forms and the Demiurge should not be counted as physical entities. However, *contra* Broadie, I will maintain that, as long as the pre-cosmic state of affairs is relevant to the metaphysical constitution of the elements, and my research aims at addressing the Timaean metaphysical outlook, an account of the Receptacle (and of the elements for how they are present in the Receptacle) will be needed.

Finally, I need to outline my preferred methodology. As already pointed out, the proper object of my study is the *Timaeus* and, more specifically, the account of physical reality therein presented. This being said, there is a particular aspect of my chosen approach that I ought to pre-emptively make clear — and which might make my methodology qualify as *hybrid*. In my analysis, besides elaborating on a close reading of the Timaean text, I will also appeal to a discussion of some relevant views in contemporary metaphysics (most notably, *Existence and Priority monism* in Chapter II and of *Dispositionalism* and the *Powerful Qualities View* in Chapter III) — in accordance with the two-fold objective of my research. This being said, such a hybrid approach, which relies on both a cautious reading of the Platonic text and an open-minded confrontation with the newest proposals in contemporary metaphysics, will always be primarily and *essentially* oriented at producing an *innovative* (as it makes use of newly discovered metaphysical tools), yet *legitimate* (as it is firmly grounded in a careful analysis of the original text), interpretation of the Timaean metaphysics. That is to say that the accounts of the contemporary metaphysical views that will be conducted ought not to be taken as independent, self-standing elements, but should rather always be read in connection with my proposed interpretation of the *Timaeus* — that is, for how they can contribute to our reaching a better understanding of the Timaean metaphysical outlook.
Just one last point before starting with my analysis: a synthetic outline of the structure of my work.

The thesis may be divided into three parts — excluding the present introductory section and the concluding remarks.

In the first chapter, I shall focus on the mereological structure of the Timaean Cosmos. Accordingly, in the first section of the chapter, I will read the passage of the demiurgic construction of the World Body (II.1.1), provide an (innovative) account of the notion of bond (II.1.2), and finally sketch out a brief picture of the dependence relations that hold between physical entities in the Timaean context (II.1.3). In the second section, I shall investigate the distribution of structure in the physical reality, and I shall thus address the mereological constitution of the elemental bodies (II.2.1), and of their ‘basic’ components (II.2.2) — to answer the question of to what extent the complex of the dependence relations outlined in the first part permeate the Cosmos (II.2.3, II.2.4). Finally, in the third section, I shall consider two models of mereological fundamentality that have been put forth in the recent debate (II.3.1–II.3.3), and, finally, formulate my preferred understanding of Plato’s account of the structure of physical reality (under its mereological aspect) in the Timaeus (II.3.4). In sum, in the first chapter, I shall provide a reading of the composition of the Cosmos such that there is only one basic entity (conceived of as the ultimate structure), on which all other entities a-symmetrically depend (according to a downward metaphysical necessitation), with structure going all the way down — a view which I shall contend might be seen as an instance of Priority monism.

Then, in the second chapter, I will address the question of how are the things that are there in the Timaean Cosmos, and thus study the account of the metaphysics of properties that Plato puts forth in the dialogue. To this extent, the chapter will be divided into four sections. In the first section, I shall outline the basic metaphysical set-up of I take the elements to be in Timaeus, and I will thus first isolate the ontological category under which they fall (III.1.1) and then study the metaphysical constitution that they exhibit (III.1.2). In the second section, I will zoom in on the elements’ metaphysical profile, and thus investigate the ‘aspects’ they instantiate, namely, their nomic account (III.2.1) and their categorical, qualitative side (III.2.2) — while linking my arguments to what has been previously achieved in Chapter II (III.1.3, III.2.3). In the third section, I will complete the picture by addressing the role that the aspects of the elemental properties play towards the overall metaphysical make-up of physical reality — thus formulating my final reading of the text (III.3). Finally, in the fourth section, I shall consider some views that animate the contemporary reflection in metaphysics of properties (III.4.1) and argue that they might shed new light on (and help us better comprehend) Plato’s
understanding of the metaphysics of the elemental properties in the *Timaeus* (III.4.2) — which I will ultimately provide a synthetic formulation for in the last paragraph (III.4.3). In sum, in the second chapter, I shall hold that the elemental properties present two fundamental yet distinct *aspects* (which are *nothing over and above* the overall property), one of which is eminently *qualitative* (and grounds the phenomenal appearance of the observable world), and the other which is purely *structural* (and accounts for the nomic relations that preside over the causal functioning of the Cosmos) — a view which I shall contend might be seen as a version of the *Powerful Qualities View*.

Finally, in Chapter IV, I will first outline and briefly discuss the overall view that I attribute to Plato in the *Timaeus* concerning the metaphysical constitution of physical reality (IV.1); and then I shall consider two main virtues that I believe my account entails (IV.2): the first one concerns the capacity of Plato’s account (if read under my proposed interpretation) to answer the Zenonian concern for infinite divisibility in an elegant and metaphysically parsimonious way (IV.2.1); while the second one addresses what I call the ‘Recognition problem’ of human perception, which my view has the resources to do away with, without postulating *ad hoc* Forms or invoking the mechanism of *anamnesis* (IV.2.2).
II. The Architecture of the Cosmos: 

*Platonic Cosmological Monism*

In this first chapter, I will aim to provide an account of the mereological architecture of the Timaean Cosmos, and I shall do so by answering two fundamental questions regarding Plato’s account of the structure of physical reality, namely how should we read Timaeus’ remark that the Cosmos is a ‘self-sufficient’ (αὐταρκεῖς, 33d2), ‘unique whole of wholes’ (ἐν ἕνα ὅλον ὅλων ἔξ ἕπάντων, 33a9), and what is the metaphysical status of the elemental bodies (that is, whether the Cosmos may ultimately be seen as a whole of simples or a structure of structures).

II.1 The Body of the World as (the Ultimate) Structure

In this first part, I will investigate the nature and function of the (geometrical) proportion (that is established between the elements) that Timaeus refers to in accounting for the solidity of the Cosmos — to make sense of Plato’s description of the Cosmos as a unique whole of wholes.

II.1.1 The putting together of the (physical) Cosmos

The story of the construction of the World Body (from the elements) begins at 31b4 and ends at 32c4:

Now that which comes to be must have bodily form, and be both visible and tangible, but nothing could ever become visible apart from fire, nor tangible without something solid, nor solid without earth. That is why, as he began to put the body of the universe together, the god came to make it out of fire and earth. But it isn’t possible for two things to form a proper structure without a third; there has to be some bond between the two that brings them together. Now the best bond is one that really and truly makes a unity of itself together with the things bonded by it, and this in the nature of things is best accomplished by proportion. […] As it was, however, the universe was to be a solid, and solids are never joined together by just one middle term but always by two. Hence the god set water and air between fire and earth, and made them as proportionate to one another as was possible, so that what fire is to air, air is to water, and what air is to water, water is to earth […]

(31b4–32c4)²

² Unless otherwise indicated, translations of the *Timaeus* are from Zeyl (2000) — with occasional modifications. All original texts can be found in the Appendix (VII.1).
In the passage, Timaeus states that, as the Cosmos is to be (created as) a bodily entity, it must be visible and tangible. Visibility is achieved through the employment of the element of fire and tangibility through earth. However, as two things cannot be ‘conjoined’ (συνίστασθαι) without a third thing, there must be some ‘bond’ (δεσμόν) to ‘bring the two together’ (συναγωγόν). As the construction of the Cosmos is aimed at the best, the bond in question must be the fairest of the bonds, and this is found in the ‘geometrical proportion’ (ἀναλογία). It is precisely from the requirement that the Cosmos must be put together in the fairest manner possible that follows the need for a bond and the choice of geometrical proportion as the perfect candidate for the task. In its basic form, the proportion described in the passage is a continued geometrical proportion with three terms, such that $a : b = b : c$. As the Cosmos is to be a solid, then, the proportion that needs to be established (between fire and earth) must involve two further terms, that is, two more elements, which are to be put in between fire and earth — and these are water and air. Thanks to the collocation of air and water as intermediate between fire and earth, the proportion is realised, and the Cosmos is created as tangible and in as fair a manner as possible.

II.1.2 The notion of ‘bond’ in Timaeus 31b9–c1

As is clear from my brief reconstruction of the passage, the whole argumentative structure of Timaeus’ story of the creation of the Cosmos (in the finest way possible) hangs on the notion of ‘bond’ (δεσμός) and the identification of this bond with the ‘geometrical proportion’ (ἀναλογία). Now, how are we to understand the meaning and function of the proportion as a bond?

I submit that there can be isolated two main ways in which one can conceive of the bond in the Timaean context — and thus grasp Plato’s understanding of the relation of composition.

One might read 31b9–c1 literally and take the bond to be something that is added to the pre-existing elements, and that it is this ‘something’ (i.e., the bond) that would ‘bring the elements together’ (συναγωγός). In this picture, the bond is assimilated to a connector, that is, something substantial which has the power to ‘cement’ things together thus giving rise to the whole — this view of the δεσμός as some sort of “metaphysical glue” is suggested by McCabe (1994: 167–8; 184–5). According to the Metaphysical Glue reading, then, the proper bond at 31b9–c1, that is, that which is responsible for the composition of the World Body, is water and air. Indeed, by being put in between fire and earth, water and air constitute the World Body as

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3 For a fuller discussion on the specific form of the proportion see Cornford (1937: 42–50).
a unity — such that water and air are directly responsible for the composition of the whole (i.e., the World Body). This being said, as it conceives of the bond as a (mereological) part of the composite whole (cf. McCabe 1994: 185), the Metaphysical Glue reading suffers from a conceptual difficulty (cf. Harte 2002: 11). Indeed, if the glue were conceived of as itself a part of the whole (along with the other parts), it is not clear how it could not be detachable, or not essential towards the composition of the whole. Further, it seems that the model might generate a regress — as (firstly?) noticed by Aristotle (Metaphysics vii. 17, 1041b12–33). If the whole is conceived as the sum of its parts plus the bond, and the bond is taken itself as a part of the whole, then all we have is another sum of parts, which, in order to be a whole, needs the addition of the bond, which is itself a part, and so on.

One alternative way to interpret the passage would be to focus on the verb συνίστημι at 31b10 (which I translated ‘form a structure’, following Waterfield 2009 and contra Zeyl 2000) and hold that the bond that is required to realise the unity of the World Body is not something concrete (that would, as it were, ‘glue’ earth and fire together) but a proper configuration of the relations that hold between the elements, such that the relations in which the elements stand are the bond — I shall call this, the ‘Elements as realisers’ reading. In this second picture, the bond would not be something over and above the elements themselves, nothing extra to the elements and the relations they entertain with each other. Further, while the elements are brought together by the proportion (that is, by the relations between them), their being arranged according to the proportion makes them an instance of the proportion itself — that is, a configuration. Indeed, if one accepts this second reading (that is, of the bond as not something substantial but as the arrangement of the elements itself), one can make sense of the claim that the geometrical proportion unifies both itself (into a specific configuration or shape) and the things that it binds together (31c2–4) — for the elements de facto realise the proportion by standing in certain relations with each other. From this, it follows that the addition of water and air has not to be taken as meaning that air and water are what binds fire and earth together (that is, that they are the bond); rather, water and air are added to realise the proportion — hence, Elements as realisers. In this direction, it is the proportion (as not something extra to the elements) that binds the elements together, whereas water and air “are added only to ensure that we have sufficient terms to stand in the requisite proportions” (Harte 2002: 232) — that is, to realise the specific proportion that is required to unify the Cosmos (which must involve four elements, as the Cosmos is to be solid).

Now, to better characterise my preferred reading, we might say that water and air constitute the necessary conditions for there to be the composite object, but they are not the primary
agent of composition of the elements into the World Body. Harte provides an illustrative example for this. She refers to phonetics (and to the role of vowels as addressed by Plato at Sophist 253a) and points out that combination depends upon, for instance, “the presence of certain structural relations between the English phonemes ‘k’, ‘æ’, and ‘t’, such that they can be combined to form the syllable ‘kæt’, but fail to form a syllable when ordered ‘tkæ’” (2002: 155). In the example, vowels are necessary for there to be the syllable, as they realise the structure (i.e., the order of the phonemes), thus enabling the pronunciation of the compound; but they are not sufficient, as it is the order of the phonemes (i.e., the structure) that is properly responsible for composition in the first place (cf. also Silverman 2002: 161). Accordingly, in the case of the composition of the World Body at 31b4–32c4, water and air (just like vowels at Sophist 253a) should not be seen as the primary (i.e., direct) agents of composition, for they operate at a preliminary level (that is, providing the conditions for combination to be realised) — such that, without water and air (and earth and fire) combination cannot be realised (just like, without vowels, syllables cannot be pronounced (cf. Ryle 1960: 438)). Yet, the primary agent of composition is the internal structure (that is, a certain configuration) of the relations that hold between the elements of the (aspiring) compound — e.g., the order of the phonemes in Harte’s example, or the proportion between the elements at Timaeus 31b4–32c4 (which, in turn, determines the configuration or shape of the World Body, which will then be revealed to be the sphere, cf. 55c5–6). That is to say that the four elements (as the categorical element), one the one hand, and the proportion (as the structural element), on the other, are jointly necessary for there to be the composite object — but neither of the two (if taken in isolation) is sufficient.

In sum, I advance that my proposed ‘Elements as realisers’ should be seen as the preferential interpretation of Plato’s understanding of the notion of bond at 31b4–32c4 (and thus of the role of water and air in the composition) — a reading which we might thus render as follows:

**Elements as realisers**: the elements constitute the necessary (though not sufficient) conditions for there to be the World Body as a composite entity. In this direction, the proportion (i.e., the structure), on the one hand, and the elements (i.e., the categorical aspect), on the other, are jointly necessary for there to be the World Body (i.e., the composite) — such that the role of the elements is to realise the structure (thus yielding the whole).4

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4 A full list of the claims that I shall defend in the thesis can be found in the Appendix (VII.2).
Before moving on, one specification is in order. As they are presented at 31b4–32c4, there seems to be nothing particularly special about water and air (in opposition to fire and earth) — or at least nothing that would suggest that they play some special role towards the composition of the whole. Indeed, from the reading of the passage, it seems that all the elements are treated as equally available materials for the construction. Now, in the Metaphysical Glue reading, most of the attention is placed on water and air (rather than on earth and fire), as it is precisely water and air which are directly and primarily responsible for the composition of the World Body — and such emphasis seems unjustified. On the contrary, it is clear how, if one accepts my proposed reading, she will regard the relevance of the actual role that water and air play in the composition of the World Body as significantly diminished (with respect to Metaphysical Glue), and as equalised to the one of earth and fire. This is to say that, on the one hand, as they are not the primary agents of composition (contra Metaphysical Glue) nor do they constitute the arrangement of the other elements in the World Body, there is a sense in which water and air are not special at all — both water and air and earth and fire are to be conceived as the categorical element that is employed to realise the structure (that is, the proportion). This being said, it should be emphasised that to say that their role towards the composition of the World Body is the same, does not mean that water and air, and fire and earth, in themselves, are the same — it just means that the elements (as the categorical aspect of the whole) are all equally available as realisers of the proportion (conceived of as the structural aspect of the composite). Further, it should also be stressed that, under Elements as realisers, even though they are not the direct agents of composition (for the configuration of the internal relations between the elements is), water and air are still necessary for there to be a composite — so they do play quite a prominent role.

II.1.3 Cosmic Architecture

Once having clarified the role of the bond and the precise understanding of the relation of composition in Timaeus 31b4–32c4 (i.e., Elements as realisers), we are now in the position of outlining my preferred reading of the construction of the World Body — and thus of Timaeus’ claim that the Cosmos is a whole of wholes (Timaeus 33a9).

A first crucial point that ought to be established is that (a.) while the proportion’s role is manifestly to bind (συνδέω) the elements together, from a metaphysical point of view, the proportion itself is not something extra to the elements that it binds together, that is, it is not an additional (mereological) part of the composite — in continuity with Elements as realisers and contra Metaphysical Glue. That is to say that the proportion (or ratio) determines the complex of
the relations in which the elements stand to one another, and, as what is truly responsible for the combination, it constitutes the unity of the elements (that is, the elements-as-united-in-a-whole), and thus the Cosmos as a structure — where the proportion thus constitutes the configuration or shape of the Cosmos (cf. 55c5–6) by determining the relations between the elements. However, in line with Elements as realisers, the Cosmos being essentially structure-laden is not sufficient to determine its full metaphysical identity — as a certain categorical aspect (which would be the elements) is also needed. Specifically, water and air, even though they should not be seen as the direct and primary agents of composition, are necessary to the nature of the composite entity as they realise the proportion (i.e., the structure). In sum, the Cosmos should be seen as a ‘categorical structure’, that is, an entity which is essentially structure-laden, but also essentially categorical — where both ‘aspects’5, namely, its being structure-laden and its being categorical, are jointly necessary for there to be the entity (i.e., the Cosmos). 6

A second point would be that (b.) as the Cosmos has to be regarded as a structural unity in which the individual elements constitute the unity in virtue of standing in certain relations with each other, the elements are themselves structure-laden (Harte 2002: 162) — insofar as they are defined (qua elements of structures) in virtue of the position they occupy in the structure. Recall the example of the English syllable ‘kæt’. Here the phonemes ‘k’, ‘æ’, and ‘t’, are identified in the context of the (specific) relations that hold between them (their order, in this case) — indeed, relations which allow them to constitute the structural unity ‘kæt’. In this direction, there is a sense in which one could describe the complete extrinsic profile of an entity, that is, the description of how an entity behaves in nature, its nomic role, where the entity is an element of a structure, simply by looking at the relations that the entity entertains with the other elements that compose the structure that entity is a part of. If this is reasonable, then it follows that the elements of structures gain their identity (qua elements of structures) in virtue of standing in certain relationships with other elements of the structures they compose. Adopting this approach to composition, it is clear how “structure is essential to the identity of the parts of the whole no less than to the whole itself” (Harte 2002: 158) — as the positions that elements occupy within the structure determine their identity (qua elements of structures).

5 A more expansive treatment of my understanding of the notion of ‘aspect’ is offered in Sections III.4.1, III.4.2.

6 I should point out that my notion of ‘categorical structure’ departs slightly but significantly from Harte’s one of ‘contentful structure’ (2002: 178, 189–190, chapter 5), for I do not conceive of the categorical aspect of entities as in mere negative terms (cf., e.g., 2002: 188, 265–266), and of the metaphysical identity of entities as fully and solely determined by their structural aspect (cf., e.g., 2002: 3, 175–176). More on this in Sections III.1.3, III.2.3, and III.3.
One last point (c.) concerns the dependence relation that is established between the structure and its elements — and represents the most central notion for our purposes in the present chapter. Let us reconsider the line of argumentation up to this point. If the proportion is what is responsible for the Cosmos as a unity (that is, for the elements-as-united-in-a-unity), then the Cosmos is essentially structured. Further, if the elements (of a structure) gain their identity (qua elements of structures) by occupying certain positions (i.e., by entertaining certain relationships with the other elements) within the structure they contribute to compose, they are essentially structure-laden. From this, it follows that parts of wholes depend for their identity on the wholes they are parts of — such that there is a sense in which wholes are metaphysically prior to parts. Put this to work in the *Timaeus*: the structure (i.e., the proportion) is prior to the elements, and the Demiurge chooses to use the elements to realise the proportion (thus giving rise to the World Body as a unity of the elements according to a particular shape, i.e., the sphere, 54d–55c) — but they are not themselves the proper objects of the divine ordering action (cf. Harte 2002: 233).

In sum, I submit that we should regard the Cosmos as an essentially structured whole of parts (i.e., a ‘categorical structure’), where the elements that compose the Cosmos are essentially structure-laden (cf. Harte 2002: 158–62) — leading to a thus conceived picture:

**Cosmic Architecture**: the elemental bodies (qua elements of structures) asymmetrically depend on the Cosmos, conceived of as the ultimate (structured) whole (i.e., *categorical structure*).

This being said, it ought to be noted that, at this stage (that is, with Cosmic Architecture), the elements do not need to be structural units in themselves (as the Cosmos is) — that is, they are not necessarily to be seen as categorical structures. In fact, even though they are not themselves complex, they still are to be seen as structure-laden — as they get their metaphysical identity (qua elements of structures) by occupying a certain place in the structure they constitute. This is to say that, as far as the initial part of the construction of the World Body is concerned (i.e., 31b4–32c4), the elements may well be conceived of as Empedoclean roots — that is, as the simple units all entities are ultimately composed of. Indeed, if one sticks to the first stage of the construction of the Cosmos (i.e., 31b4–32c4), one may well get the impression that the four elements are just “waiting about to be picked up and used” (Broadie 2012: 182) — I shall address this issue presently.
II.2 The Elemental Bodies as Structures (of Structures?)

In this second part of the chapter, I shall address the question left open by the previous paragraph, namely whether the Cosmos has to be regarded as a unity of simples or a (categorical) structure of (categorical) structures — and, the latter being the case, what kind of structures the elemental bodies instantiate.

II.2.1 The elements as geometrical structures

At Timaeus 48b, Plato seems to suggest that the widespread belief that the (Empedoclean) roots are the elements proper (στοιχεῖα) (i.e., the minimal components of physical reality) is false, and that, in fact, they are not even comparable to “syllables” (συλλαβῆς) (cf. Waterfield 2009: 139). In order to clarify Plato’s statement and thus find out whether the Timaean Cosmos is truly a unity of simples (and what these simples should be taken to be), we ought to take into consideration his proposed account of the metaphysical profile of the elements. Plato’s exposition of the construction of the elements starts at 53c4–d4:

First of all, everyone knows, I’m sure, that fire, earth, water and air are bodies. Now everything that has bodily form also has depth. Depth, moreover, is of necessity comprehended within surface, and any surface bounded by straight lines is composed of triangles. Every triangle, moreover, derives from two triangles, each of which has one right angle and two acute angles. Of these two triangles, one [the isosceles right-angled triangle] has at each of the other two vertices an equal part of a right angle, determined by its division by equal sides; while the other [the scalene right-angled triangle] has unequal parts of a right angle at its other two vertices, determined by the division of the right angle by unequal sides.

The passage starts with the affirmation of what seems to be deemed a manifest fact about physical reality: as the elements are the constituents of (all) physical bodies, they are to be ‘physical bodies’ (σώματα) as well. Further, it is said that it is a general property of physical bodies to have ‘depth’ (βάθος), that is, to be three-dimensional (cf. Miller 2003: 165) (cf. 32a7–b2). Then, Timaeus goes on to claim that anything that has depth (i.e., that is three-dimensional), has this depth ‘enclosed’ (περιειληφέναι); and, in particular, that finite depth is bound by ‘plane surface’ (τὴν ἐπίπεδον φύσιν). Now, the intersection of plane surfaces (that are needed to enclose the finite three-dimensional body) is a ‘base’ (βάσις). Accordingly, the intersections of plane surfaces will be ‘rectilinear bases’ (ὀρθῆ βάσεως). Finally, we find the third claim: the rectilinear bases are each composed of (i.e., can be broken down into) ‘triangles’ (τριγώνων) (cf. Aristotle, Nicomachean Ethics, Z 8, 1142a28; Philoponus, On de Anima, 256.12).
Then, at 53c8–d4, we read that not all triangles are identical and that the (finite) plane surfaces of the elemental bodies may be divided into two basic *kinds* of triangles — “obtained by dropping a perpendicular from any angle to the opposite side” (Cornford 1937: 213). Each of the resulting (basic) triangles will have one right angle and two acute angles. Of all the possible triangles that may result from this operation (i.e., they may be both isosceles, one scalene and one isosceles, or both scalene), two are chosen: one is the right-angled isosceles (which is a unique type), the other is a particular type of scalene, namely, the half-equilateral.

So far, then, it is clear how Plato did not conceive of the elemental simple bodies as *simples*, that is, as mereological atoms. In particular, it seems that the two basic triangles (namely, the right-angled isosceles and the half-equilateral) are to be seen as the ultimate constituents of physical reality and deemed the *στοιχεῖα* proper (vis-à-vis the elements (cf. *Timaeus* 48b)), as they constitute the *units* which the elemental bodies (as theoretical structures (cf. Miller 2003: 166–8)) are ultimately constituted of. Thus, from a preliminary survey of 53c4–d4, we can provide an initial answer to our question: the Cosmos is not a whole of simples.

In sum, we have a first indication concerning the instantiation of structure at the sub-cosmic level (that is, at a lower level than *Cosmic Architecture*):

**Structural units:** given the elemental solids’ peculiar constitution, we can say that structure is not only instantiated at the Cosmic level (i.e., *Cosmic Architecture*) but also at the elemental level.

### II.2.2 The basic triangles as *mereological ultimates* (?)

Having reached this stage, one might argue that the Cosmos may still be considered a whole of simples, in so far as these simples are not the elemental bodies but the triangles of which the (faces of the) elements are (ultimately) composed — thus denying that the elements are the only possible candidates for the role of ultimate constituents. To address this further question of whether the two basic triangles may be conclusively said to be the mereological ultimates or if there exist further (lower) levels of composition, let us proceed with our analysis of the Timaean text — and read 53d4–7:

This, then, we presume to be the originating principle of fire and of the other bodies, as we pursue our likely account in terms of Necessity. Principles yet more ultimate than these are known only to the god, and to any man he may hold dear.

(53d4–d7)
After having selected the two basic triangles, namely the right-angled isosceles and the half-equilateral, at 53d4, Timaeus claims that ‘this is the principle (or starting point)’ (ταύτην [...] ἀρχὴν) of (the geometrical solid of) fire and of all the other elemental bodies. Then, at 53d6–7, Timaeus concludes that ‘more ultimate principles’ (ἀρχαὶ ἀνωθεν) might exist and be available to divine beings and god-loved people. It should be registered that the construction of the Greek text at 53d4–7 suggests a strong link between the two occurrences of ἀρχὴ, namely ταύτην [...] ἀρχὴν at 53d4 and ἀρχαῖς ἀνωθεν and 53d6 (cf. Cornford 1937: 212) — a connection which appears to be significant in the economy of the passage, and that should thus be accounted for by any tentative interpretation of the text.

*Prima facie*, the above passage presents both a conceptual and an interpretative challenge, which we might render as follows:

i. **Interpretative challenge:** The Greek text suggests that the two instances of ἀρχὴ (i.e., ἀρχὴν at 53d4 and ἀρχαῖς at 53d6) are connected, but do they actually refer to the same entities? How should we understand the terms ἀρχὴ and ἀνωθεν, *in this particular context*?

ii. **Conceptual challenge:** What does it mean that there might exist ‘more ultimate’, or ‘higher’ (ἀνωθεν) ‘principles’, or ‘starting points’ (ἀρχαῖς), in light of the overall picture of reality that Plato is tracing in the *Timaeus* (and in this specific part of the dialogue)?

Let me anticipate my position on the matter. Harte suggests that ταύτην ἀρχὴν at 53d4 refers to the “sequence of geometrical claims that he [i.e., Timaeus] has made” (2002: 236) — such that the ‘principle’ or ‘starting point’ of the elemental bodies should be taken to be the compositional account that Plato has offered at 53c4–d4. *Contra* Harte, I believe that the expression refers to the basic triangles (which are the objects of the immediately preceding passage, i.e., 53c8–d4), or better, to the mereological level of composition at which the two basic triangles reside — so that it is the compositional level of the two basic triangles that is to be seen as the ‘principle’ or ‘starting point’ upon which the elemental regular solids depend.

This being said, let us now consider the text and our two challenges in more detail; and let us focus on the latter part of the passage, that is, the claim that ‘principles (ἀρχαῖς) yet more ultimate (ἀνωθεν) than these are known only to the god, and to any man he may hold dear’ (53d6–7) and, in particular, on the expression ‘ἀρχαῖς ἀνωθεν’. Now, *prima facie*, I believe there might be isolated two possible interpretations for the expression (in connection with ταύτην ἀρχὴν at 53d4) — and thus two ways to answer our questions above.
First of all, one might follow Harte’s reading of ταύτην ἀρχὴν at 53d4 and apply the same interpretation to the explanation of ἀρχάς ἀνωθεν at 53d6. Thus, one might claim that the expression at 53d6 is intended to emphasise that there might be further, possible accounts of the composition of the geometrical solids — thus retaining a close connection between the two instances of ἀρχή (i.e., at 53d6 and at 53d4). This would answer our Interpretative challenge (i.e., i.): there is indeed continuity between the two occurrences of ἀρχὴν, which both refer to Timaeus’ account of the construction of the regular solids (conceived of as the ‘principle’ or ‘starting point’ of the solids themselves). However, while Harte’s suggestion might be sensible for the ἀρχὴν at 53d4, it does not seem as successful in capturing the sense of the term at 53d6 — that is to say that such proposal might fail the Conceptual challenge (i.e., ii.). Indeed, while at 53d4 ἀρχη may well be used to indicate the procedure by which the elemental bodies are put together, the ἀρχάς at 53d6 (which is plural) does not seem to be making a procedural point. On the contrary, the term (at 53d6) seems to be referring to some proper objects, that is, some principles upon which the metaphysical structure of the Cosmos depends.  

Secondly, one might reject Harte’s suggestion (of ταύτην ἀρχὴν at 53d4 as referring to the geometrical account outlined at 53c8–d4), and claim that ταύτην ἀρχὴν actually refers to the two basic triangles that are discussed at 53c8–d4 (following Cornford 1937: 212), while ἀρχάς ἀνωθεν at 53d6 refers to the Forms — thus renouncing the link between the two instances of ἀρχη (i.e., the first part of i.). Now, if we take ἀρχάς at 53d6 to refer to the Forms, we might read 53d6–7 as emphasising that there might exist some further ‘principles’ (ἀρχάς) (as in ‘objects’) that are ‘more ultimate’ (ἀνωθεν) (as in ‘higher’) than the triangles (for they ground the metaphysical structure of the natural world), and that these higher objects exceed the ones that figure in the account offered at 53c8–d4, and have a certain divine status — these objects being the Forms. Thus, according to such reading, 53d6–7 should be taken somewhat as a final reminder to the reader that, even though the basic triangles are here treated as the metaphysical ultimates, they really are not — thus marking a certain discontinuity with the purely mereological focus of the preceding passage (which addressed the structure of the geometrical solids). Now, I must concede that it is indeed tempting to recognise in ἀρχάς ἀνωθεν (literally, ‘principles from on high’) a reference to the Forms — as this would elegantly resolve the

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7 One way one might adapt Harte’s proposal for ταύτην ἀρχὴν at 53d4 and apply it to the interpretation of ἀρχάς ἀνωθεν is to read the expression at 53d6 as a reference to the initial indication (then aptly re-stated at 53d4–5) upon which the whole discourse of Timaeus is predicated, that is, that it merely amounts to an εἰκός λόγος (cf. Cornford 1937: 212). In this direction, one might say that ἀρχάς ἀνωθεν at 53d6 should be taken as meaning that ‘more ultimate, conclusive accounts [of the metaphysical constitution of physical reality]’ may exist (and may be accessible to those beings which are not subject to the human epistemological limitations).
Conceptual challenge (i.e., ii.). However, I suspect that such reading might lead the way to (at least) two problems, both related to our Interpretative challenge. First of all, adopting the above reading would mean reading the term ἀρχὰς in complete discontinuity with the specific compositional ethos of the passage — whereas it is good practice, I take it, to prefer translations (and interpretations) that are sensitive to the context at hand (i.e., the second leg of our Interpretative challenge). Further, attributing the ἀρχὰς at 53d6 to the Forms and the ἀρχὴν at 53d4 to the triangles contradicts the strong link between the two occurrences of the term ἀρχὴ that the construction of the Greek text seems to suggest — i.e., the first leg of our Interpretative challenge.

This all being said, I believe there is a way to interpret ἀρχὰς ἄνωθεν at 53d6 in such a way that, at the same time, is in line with the compositional nature of the passage at hand and retains a strong connection with ταύτην ἀρχὴν at 53d4 (i.e., Interpretative challenge); and that can also explain the conceptual motives behind Plato’s claims at 56d4–7 (i.e., Conceptual challenge). In particular, I submit one should take ἀρχὰς at 53d6 and ἀρχὴν at 53d4 as both referring to the two basic triangles that compose the faces of the (elemental) regular solids (namely, the right-angled isosceles and the half-equilateral), or better, to the levels of subdivision (of the faces) at which these two triangles reside — and this should answer the Interpretative challenge. Indeed, as we shall see in the next section (i.e., II.2.3), at 54d–55c, Plato specifies that there are different levels of composition of the faces of the elemental bodies. Now, bearing that in mind, we can read the passage somewhat as follows: 53d4 claims that the two basic triangles (and the level of composition at which they reside) are the ‘principle’ or the ‘starting point’ of the elemental bodies (as also suggested by Cornford (1937: 212)); however — as 53d6–7 then alerts us —, ‘further’, ‘more ultimate’ (ἄνωθεν) ‘levels of composition’ (ἀρχὰς) may exist and be accessible to divine beings et similia. Thus, following the narrative, I believe one should read 53d6–7 as a warning that, even though the two basic triangles are here treated as the ultimate components of the elemental bodies and thus as the mereological ultimates (ταύτην ἀρχὴν, 53d4), it may be the case that more ultimate (ἄνωθεν) triangles or levels of subdivision (ἀρχὰς) exist (cf. Cornford 1937: 212; Zeyl 2000: lxvi; Miller 2003: 172) — and this explains our Conceptual challenge.

Now, if this is all reasonable, then we should read 53d6–7 as claiming that the identification of the ultimate components with the basic triangles is not definitive. Indeed, one might say that, while reassuring that, as far as the Timaean enquiry goes, the basic triangles should indeed be taken as ultimates (53d4), by saying that if there are more ‘ultimate principles’ (ἀρχὰς ἄνωθεν) than these (namely, the basic triangles), they are known only to the god and to men who are dear to him, Plato wants to make it clear that the identification of the basic triangles with the mereological ultimates is not a necessary truth. That is to say that we should
read 53d4–7 as indicating that not only structure is indeed instantiated at the Cosmic (i.e., *Cosmic Architecture*) and at the elemental level (i.e., *Structural units*), but that it is *metaphysically possible* that further (lower) levels of division (and thus of structure) can be identified — on this see Section IV.2.1. We can thus sum up my proposed reading of 53d4–7 as follows:

**Downward composition:** even though for the purposes of his account in the *Timaeus* the two basic triangles constitute the bottom-most level of composition of physical reality, at 53d4–7, Plato warns the reader that it is metaphysically possible that further levels of lower composition may exist.

### II.2.3 The choice of the basic triangles and the grand metaphysical design

In the previous passage, we have seen how Plato asserts that the elemental bodies are ultimately constituted by two basic (kinds of) triangles, namely the right-angled isosceles and the half-equilateral. After having re-stated that his choice of the triangles is definitive, Plato recalls the process of transformation of the elements (which was previously introduced at 49b–c) that the construction of the solids is designed to account for (54b–d). Finally, at 54d–55c, we are presented with the much-discussed and still obscure (cf. Brisson 1994: 364; Brisson & Meyerstein 1995: 46; Böhme 2000: 304) passage of the construction of the geometrical figures:

Leading the way will be the primary form [the tetrahedron], the tiniest structure, whose elementary triangle is the one whose hypotenuse is twice the length of its shorter side. Now when a pair of such triangles are juxtaposed along the diagonal [i.e., their hypotenuses] and this is done three times, and their diagonals and short sides converge upon a single point as center, the result is a single equilateral triangle, composed of six such triangles. When four of these equilateral triangles are combined, a single solid angle is produced at the junction of three plane angles. This, it turns out, is the angle which comes right after the most obtuse of the plane angles. And once four such solid angles have been completed, we get the primary solid form, which is one that divides the entire circumference [sc. of the sphere in which it is inscribed] into equal and similar parts. […] One other construction, a fifth, still remained, and this one the god used for the whole universe, embroidering figures on it.

(54d–55c)

In the above passage, we are told that the Demiurge uses six half-equilateral scalenes to compose the equilateral triangular face (which is common to the pyramid, the octahedron, and the icosahedron) and four isosceles to compose the square face of the cube. Once the construction is completed, the geometrical solids are assigned to the elemental bodies (55d–56d): the cubical figure (composed out of the right-angled isosceles) to earth, the pyramid to fire, the octahedron to air, the icosahedron to water — with the fifth regular solid (i.e., the dodecahedron), which is not constructed (as it cannot be composed with the sole employment
of the two basic triangles (cf. Cornford 1937: 218)), to be used for the sphere (i.e., for the Cosmos), as we have already mentioned (cf. Section II.1.2).

From the Platonic reconstruction of the geometrical figures, several questions remain unanswered, two above all:

i. **Specific triangles:** It still is unclear why the choice fell on these two kinds of triangles in particular, namely, the right-angled isosceles (i.e., the half-square) and the specific right-angled scalene (i.e., the half-equilateral).

ii. **Overly complex method:** *Prima facie*, the process of composition of the solids seems unreasonably complex, as it is seen to involve more triangles than are necessary (that is, six half-equilaterals instead of two, and four half-squares instead of two).

Now, I believe that clarifying these two particular facets of Plato’s chosen method of construction of the solids may shed light on some significant features of the Timaean metaphysical outlook — and thus help us answer the question which initiated the present section, that is, whether the Cosmos may be said to be a whole of simples or a structure of structures (and what these structures may be taken to be).

**II.2.3.1 Ubiquitous structure: geometrical structures and where to find them**

In his classic rationalisation of Plato’s method of construction, Cornford (1937: 234–9) holds that to solve the “mystery” (Zeyl 2000: lxviii), one has to look at Plato’s remarks at 57c–d, and specifically at his claim that the primary bodies exist in various sizes (cf. Vlastos 2005 [1975]: 69; Pohle 1971: 36 ff.).

Now, Cornford’s suggestion is that the construction of the equilateral faces of (what will then be revealed as) fire, water and air (out of six half-equilateral basic triangles instead of two) at 54d–55c has not to be taken as the description of the *first* level of equilateral triangles, in a series of levels with increasing size, but as the *second* level of the supposed series — such that at the lowest level of the series the equilateral faces are composed of two basic (half-equilateral) triangles, at the second-lowest (i.e., the one Plato actually described) of six triangles, at the third of eight, then eighteen, twenty-four, and so on (cf. Cornford 1937: 236). (And the same reasoning goes for the remaining geometrical solid, i.e., the cube, whose faces are composed out of half-square isosceles.)
This being said, Cornford goes on to argue that Plato chose to analyse the equilateral face of the three solids and the square face of the cubic solid into six elements and four elements (instead of two and two), respectively, because, by doing so, he could allow for the elements on two contiguous levels of the series to be not that different in terms of size. Let us take the case of the pyramid. Cornford’s reasoning is that if Plato took the equilateral triangle as elementary (instead of the half-equilateral), then he would have had on the lowest level of the scale a pyramid with one equilateral as its face. Now, if we accept that there is a definite ratio between the levels of the series, the second pyramid (i.e., the second level on the scale) would have had its face composed of four equilaterals, the next one would have had nine equilaterals as its face, the following one twenty, and so on — and, mutatis mutandis, the same goes for the square face of the cubic solid. As is clear, the intervals in size between the levels of the series would be very large (cf. Cornford 1937: 238). On the other hand, by using Plato’s basic triangles as elementary (instead of equilaterals and squares), the intervals between the levels of the series are much reduced: two solids on two subsequent levels would be quite similar in size and volume. This seems to answer our second question, that is, why Plato chose to construct his solids with more triangles than was necessary (i.e., Overly complex method) — that is, that they “can yield a series of equilateral or square faces which are much closer together in size” (1937: 238).

Now, regardless of the specifics of Cornford’s account, we can see how his whole reconstruction of the composition of the solids hangs on a crucial observation concerning the nature of the basic triangles — which corresponds to our Specific triangles: transformation between grades (of size) of solids “will be possible, if the larger scalene triangles are some definite multiple of the smaller, and if one larger triangle can be composed of two or smaller triangles” (Cornford 1937: 233). The elementary triangles have the core characteristic of allowing subdivision into parts of the same type, without limit — and this is the reason why, according to Cornford, Plato elected these particular triangles as his basic ones (i.e., Specific triangles). This means that, if we take the case of the face of the cubic solid, the square face can be divided into two half-square triangles (one of the two basic triangles), these two half-square triangles can be, in turn, divided into two half-square triangles each, these four half-square triangles may be then divided into eight half-square triangles, ad infinitum.

Now, in Section II.2.2, I have argued that, even though Plato does stop at a certain level of division (the triangles residing at which are taken to be atomic, cf. 53d4), 53d6–7 might be taken to mean that it is metaphysically possible that further (lower) levels of division (and thus of structure) can be identified, that is, more ultimate than the one at which there reside the two basic triangles — a claim which I called Downward composition. Now, such a reading of 53d6–7
seems to go precisely in the direction of Cornford’s theory of why Plato selected those exact two triangles as his basic ones (i.e., Specific triangles): the mathematical property borne by the half-equilateral and the half-square of (potentially) having their internal structure subdivided without limit — thus allowing for an infinite number of (lower) levels of internal subdivision (which is precisely the metaphysical possibility left open by 53d6–7, according to Downward composition). If this is the case, not only the elements, but also the basic triangles are to be seen as essentially structured entities — that is, entities whose internal (geometrical) structure can be internally replicated without limit. From this crucial property of the chosen triangles, we can get an idea of how, in the Timaean metaphysical picture of reality, structure goes all the way down (cf. Harte 2002: 241).

In light of Cornford’s reconstruction of the Demiurgic process of putting together the elemental solids (and the mathematical properties of the basic triangles), and considering our remarks about Plato’s claim at 53d6–7 (i.e., Downward composition), we can reformulate Structural units into a more expansive claim:

**Ubiquitous structure:** given the mathematical property of the basic triangle of having their internal structure replicated without limit, and in light of my proposed reading of 53d6–7 (i.e., Downward composition), one can say that the Timaean mereological picture allows for structure to go all the way down — such that structure is not only instantiated at the Cosmic (i.e., Cosmic Architecture) and at the elemental (i.e., Structural units) but also at the sub-elemental level.

Now, even though his series has been widely accepted (especially his solution for larger bodies and mostly in the English-speaking academic world), Cornford’s hypothesis to answer Specific triangles and Overly complex method, and thus solve the “mystery” of 54d–55d, has also been the object of a number of objections during the past 80 years. In short, there may be identified three major points of contention with Cornford’s analysis.

First of all, there is the straightforward textual objection: Plato never mentions nor gestures towards Cornford’s proposed method of construction. Indeed, Plato never mentions even the possibility of alternative methods to compose the equilateral face other than the one he himself describes, which is deemed the fairest (cf. Artmann & Schäfer 1993: 258). Secondly,

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8 Cornford’s model has been adopted almost entirely by Vlastos (2005 [1975]); Friedländer (1958); and also by Gregory (2000); and Zeyl (2000), though more cautiously. On the other hand, notably, Brisson deemed Cornford’s method of construction “la tentative louable, mais hypothétique et inutile” (1994: 391), and Pohle questioned the advantage that Cornford’s series is supposed to entail for larger bodies (1971: 36–47).
the appeal of his proposed method ultimately hangs on Cornford’s intuitions that different levels of size (i.e., what Cornford calls “grades” (1937: 234–8)) “would be too far apart” from each other, and “it would be hard to suppose that the icosahedra (i.e., the water-atoms of different sizes) could be all microscopic” (1937: 238). However, these are result of pure speculation — Plato never says anything about the difference in size between the geometrical solids and the visible entities. Finally, if we follow Cornford’s method, symmetry is lost (cf. Wilson 1889: 49; Taylor 1928: 374; Lloyd 2006: 461).

All things considered, Cornford’s reading of the construction of the elemental bodies is helpful to my research as it illuminates how there is a meaningful sense in which, in the Timaean metaphysical outlook, structure is seen to go all the way down (i.e., Ubiquitous structure), and also how there might be identified a certain mathematical ratio (or criterion) that guides the organising action of the Demiurge in his construction of the geometrical solids. However, as all objections highlight, it is precisely this mathematical side of Plato’s method which is someway neglected in Cornford’s reading. It is no coincidence, then, that it was precisely the mathematical properties of the chosen triangles that served as the starting point for alternative interpretations of the passage.

II.2.3.2 Formal continuity: the homogeneity of the cosmopoiesis

One of the alternative solutions (to Specific triangles and Overly complex method) mentioned in the last section has been put forth by Artmann and Schäfer (1993). Specifically, the two scholars claim that their account (which focuses on the mathematical side of the process of construction) fits well with Plato’s general understanding of mathematical reasoning.

Specifically, they maintain that the basic triangles are the fairest (i.e., our question i.) because “(1) they are used in a fundamental geometric construction and (2) they represent the ‘fairest of bonds’, that is, the geometric proportion, of Timaeus 31c–32a” (Artmann & Schäfer 1993: 258). Let us consider their hypothesis in more detail and let us begin with the construction of the cubic solid. The two scholars argue that the method of construction of the square described by Plato when he states that the four right-angled isosceles must be combined “with their right angles drawn together to the centre” (55b6) consists of the “well-known figure used to prove the doubling of [the area of] the square” (Artmann & Schäfer 1993: 259) — which is also mentioned in the Memo (82b–85b) and the Statesman (266a–b). The same basic reasoning...

9 Notice the use of the verbs συνίστημι (54d6), συναρμόζειν (56d5) et similia to qualify the fitting together of the triangles.
applies to the construction of the equilateral faces: the fitting together of six basic right-angled scalenes (half-equilateral) reproduces the tripling of the area of the basic triangle. In sum, Artmann and Schäfer contend that the method of construction of the solids described by Plato at 54d–55d makes perfectly good sense when one reads it as a demonstration of the tripling of (the area of) an equilateral triangle and the doubling of the square, respectively.

So much for (1), let us consider the second part of the scholars’ argument, i.e., (2). Artmann and Schäfer go on to argue that Plato’s method, when considered in light of their proposed reading (i.e., of (1)), “fits very nicely with Timaeus 31c–32c” (1993: 259). As we have seen in Sections II.1, the Demiurge puts together (the elements that compose) the World Body by means of the geometrical proportion (which is deemed the fairest of bonds, cf. 31c1), which can be expressed by the proportion \( a : b = b : c \). If we follow Artmann and Schäfer’s reconstruction, we can see how Plato put together the equilateral and square faces of the geometrical solids according to the same geometrical proportion that has been put to work in the construction of the World Body. Specifically, when we apply the suggested method to the construction of the face of the cube out of four basic half-square triangles, the proportion that we get is \( a : b = b : 2a \). Accordingly, when we go on to compose the face of the pyramid (say) out of six basic half-equilateral triangles, we get the proportion \( a : b = b : 3a \). Now, \( a : b = b : 2a \) and \( a : b = b : 3a \) are instances of the ‘fairest of bonds’ (i.e., the mean proportionals (between squares and solid numbers)) that is used to put together the elements at 31c–32a (Artmann & Schäfer 1993: 259, Figure 1.; 260, Figure 2), and these can be realised only by composing the faces of the solids out of these particular (basic) triangles — and this answers both Specific triangles and Overly complex method.

We can thus extract from Artmann and Schäfer’s reading of the process of construction of the elements one central claim for our understanding of the Timaean mereology:

**Formal continuity**: it is not only the case that, in the Timaean picture of reality, structure is instantiated at the Cosmic level (i.e., *Cosmic Architecture*), at the elemental level (i.e., *Structural units*), and at the sub-elemental level (i.e., *Ubiquitous structure*), but there is also a solid indication that the instantiated structure is of one single kind — such that there is strong formal continuity between the Cosmos (*qua* structured whole) and the elements (*qua* structured wholes).

As is manifest, Cornford (1937) and Artmann & Schäfer (1993) both exploit the fundamental property of the basic triangles of allowing subdivision into parts of the same kind (that is, their feature of having their internal structure internally replicated *ad infinitum*), and thus
both accounts show that (in the Timaean picture of reality) structure may be said to go all the way down — that is, *Ubiquitous structure*. However, Artmann and Schäfer’s reconstruction goes a bit further: it highlights that *the same kind* of structure permeates the whole Timaean metaphysical outlook, such that there is substantial continuity between the (proportion that guides the) process of generation of the Cosmos and the construction of the elemental solids (1993: 260) — that is, what I call *Formal continuity*.

**II.2.4 Timaean Mereology**

All things considered, then, I take the Timaean Cosmos as essentially constituted by *categorical structures* where the identity of the elements is defined in virtue of the positions occupied by them within the structure — that is, *Cosmic Architecture*. Further, structure (in the form of geometrical proportion) is seen to pervade the whole metaphysical system, all the way down to the minimal components of physical reality (*if any*) — that is, *Ubiquitous structure*. This, together with a close analysis of the kind of structure that the World Body and the elemental regular solids instantiate, leads to the conclusion that there is strong *formal continuity* between the structure of the body of the Cosmos (constituted by the geometrical proportion that informs the relations between the elements) and the structure of the elemental solids (which is constituted by the geometrical relation between the elementary triangles) — that is, *Formal continuity*.

If this is all reasonable, we can render Plato’s understanding of the mereological architecture of physical reality in the *Timaeus* as an instance of the following view:

*Timaean mereology*: all entities (*qua* categorical structures) a-symmetrically depend on the Cosmos, conceived of as the ultimate (structured) whole (i.e., the ultimate categorical structure) which all entities are parts of — such that there is a *downward* necessitation from wholes to their parts, *all the way down*.

Now, given that, according to *Timaean mereology*, all entities ultimately depend on the Cosmos, which is conceived of as a unified, structured entity, I believe there is a sense in which we might deem the picture of physical reality that Plato puts forth in the *Timaeus* as an instance

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10 A word of caution. As Cornford (1937: 51) and Harte (2002: 247) pointed out, even if one can accept a certain structural continuity between the method of construction of the World Body and the one of the geometrical solids, the affinity between the macro-level and the micro-level of construction stops there. Indeed, there seems to be no manifest way one can relate the quantities involved in the process of generation of the Cosmos with the ones which appear in the passage of the construction of the elemental figures.
of a mereological monism (that is, a view such that there exist only one basic entity). In this direction, in order to better qualify such a preliminary insight, let us now consider some of the metaphysical monist theories of reality that have been proposed and discussed in the recent debate in metaphysics (and see whether these may contribute to a better comprehension the Timaean model).

II.3 Platonic Cosmological Monism

In this third part, I shall elaborate on my reading of the architecture of the Timaean Cosmos (i.e., Timaean mereology) and, with an eye on the contemporary debate in metaphysics, formulate my preferred understanding of the mereological side of the Timaean metaphysical outlook as a form of Priority monism — a view which I shall call Platonic Cosmological Monism.

II.3.1 Models of (mereological) fundamentality

Historically, philosophers have advocated various metaphysical views with regard to the question of fundamentality (bearing in mind our preferred understanding of mereology, cf. Section I), but two of them seem to stand out as particularly salient: Monism and Pluralism. Pluralism, in its atomistic fashion, holds that at the fundamental level of reality there reside indivisible, basic particles (i.e., mereological simples), out of which all entities are ultimately composed. From a mereological point of view, then, Pluralism may be seen as the view that the parts are prior to their whole, and thus that “ultimate priority [is attributed to] to the ultimate parts” (Schaffer 2010a: 31). On the other hand, in general, the monist believes that the whole is prior to the parts, and thus “attributes ultimate priority to the ultimate whole” (2010a: 31).

Now, the monist ontology comes in two flavours, namely Numerical monism and Priority monism. On the one hand, Numerical monism, traditionally attributed to Parmenides and Melissus (Curd 2004: 66), is the thesis that there exists exactly one entity or item — in particular, I shall focus on a recent version of Numerical monism, called Existence monism (Horgan and Potrč 2000, 2012). On the other hand, the Priority monist believes that the world does have parts (conceived of as actual concrete objects), but these parts are dependent fragments of an integrated whole — in a word, that the whole is prior to the parts. In sum, then, both the Priority and the Existence (or Numerical) monists take the Cosmos to be fundamental. However, for the Priority monist, the fundamentality of the Cosmos hangs on the dependence relation that
is established between the physical *concreta* and the Cosmos (conceived of as the *ultimate whole* or *ultimate structure*); while, for the Existence monist, the Cosmos is deemed fundamental because it is literally the only entity (or item) that exists.

In the next section, I shall compare my proposed mereological profile of the Timaean Cosmos (i.e., *Timaean Mereology*) with the different accounts of fundamentality that have just been introduced (namely, *Existence monism* and *Priority monism*) and investigate which model provides the best framework to account for the *Timaeus*’ metaphysical outlook.

### II.3.2 Existence Monism

As already mentioned, Numerical monism is traditionally attributed to the Eleatics and is the view that there exists only one entity (or item) (cf. Curd 2004: 65). When it comes to applying this model to my reading of the Timaean metaphysics (i.e., *Timaean mereology*), I believe the main issue is that Numerical Monism cannot allow for *structured wholes*, that is, for entities to be composed of parts and still genuinely be *one*. One way one can reach the latter conclusion (that is, that Numerical monism is not *compatible* with the Timaean metaphysics) is to consider a version of Numerical monism that has been recently defended by Horgan and Potrč (2000, 2012), and named by Schaffer “*Existence monism*” (2010a: 65).

In synthesis, the view accepts the existence of a *concretum* (i.e., it denies *metaphysical nihilism*, cf., e.g., Cameron (2006)), but denies the existence of the proper parthood relation. Thus, the Existence monist believes that there exists one and only concrete particular, the ‘blobject’. The blobject presents local qualitative and structural variability, which is often identified with individual objects, processes, and events (Shani 2015: 408). Thus, according to the Existence monist, the discrete objects to which we ordinarily refer in everyday experience, in reality, are nothing more than spatio-temporal *regions* of the jello-world which exhibit specific features like colour, transparency, and density (cf. Horgan & Potrč 2000: 2). According to the view, positing discrete entities is just our natural way of referring to the world, but this practice, and precisely the operative language/world correspondence, is *indirect* — that is, the entities we refer to in the world are not genuine parts of the physical reality but constructs of the framework we employ to relate to the world. As is clear, the ontological upshot of the theory consists of establishing our familiar world of sensibles as a jello-world, that is, “a physical blobject that lacks real parts and yet still exhibits genuine structural complexity” (Horgan & Potrč 2000: 6).

This all being said, as we have seen from my reading, in the *Timaeus*, Plato seems to reject such a worldview, as he seems to have posited the existence of fully-fledged individual
II.3.3 Priority Monism

Contrary to Numerical/Existence monism, *prima facie*, Priority monism seems to present a metaphysical outline which would perfectly capture the Timaean mereological outlook — and this is due to the view’s understanding of the notions of priority, partial ordering, and basic entity (cf. Schaffer 2003, 2020a, 2020b). Let us now address and discuss these notions in order and see how (and whether) Priority monism is able to account for Timaean mereology.

First of all, in general, the Priority monist takes ‘priority’ to be a relation according to which one entity depends for its nature (and existence) on another entity (Schaffer 2003; 2010b: 345; cf. also Fine 1994, Lowe 1994). Accordingly, following the reading of the construction of the World Body and of the elements that I have defended in Sections II.1 and II.2, the Timaean cosmology appears to be constituted by structures of (categorical) structures (with structure going all the way down), such that the identity of elements of structures depends on the roles that those elements play within the structure they contribute to compose (i.e., Timaean mereology). Thus, I believe it is clear how a certain priority relation can be found in the Timaean mereological architecture.

Secondly, it is not only the case that the Cosmos is informed by a certain notion of priority between structures; rather, the Timaean metaphysical picture also instantiates that peculiar kind of priority which is required by Priority monism, namely partial ordering — that is, a hierarchical structure where the relation of priority between the layers is transitive, irreflexive, and (thus) asymmetric. Now, the kind of layering of structures (within structures) that the Timaean cosmology exhibits (according to the proposed reading) should lead to the thought that if a structure occupies a position within another structure, then the elements of the first structure are also elements of the second structure (given the dependence relation that holds between the two structures). If this is the case, then the relation of priority (or dependence) between structures at play in the Timaean Cosmos should be transitive in kind (cf. Rescher 1955: 10).
Further, as one structure cannot be prior to itself, as it is dependent for its identity on the higher-order structure, the relation of priority has also to be taken as irreflexive — that is, the property does not allow for the same element to be on both sides of the relation. Finally, from irreflexivity and transitivity, it follows that the relation is also asymmetrical — that is, given two structures A and B, if structure A is dependent on structure B, then B cannot depend on A.

Now, from priority and partial ordering follows that the Timaean Cosmos (qua ultimate categorical structure) should be seen as the (only) basic entity (that exists). Indeed, Priority monism requires for the chain of structures to originate in a basic structure, thus rejecting the possibility of limitless chains of dependence and circular dependence — this view is generally known as metaphysical foundationalism (cf. Fine 2010, Morganti 2018, Tahko 2018). Now, if we consider Timaean mereology, we may well see that the Timaean Cosmos is the only entity which does not (merologically) depend on any other entity (whereas all other entities depend asymmetrically on it) — thus qualifying as the only basic entity that exists within the physical realm.

II.3.4 Platonic Cosmological Monism

If our remarks in Sections II.3.2 and II.3.3 are reasonable, we can now rethink Timaean mereology in light of Priority monism, and thus offer a more comprehensive formulation for Plato’s conception of the mereological side of physical reality in the Timaeus:

**Platonic Cosmological Monism** (PCM): there is only one basic entity, the Cosmos, such that all other entities which populate the physical reality do exist but are not basic. In fact, all entities a-symmetrically depend on the Cosmos, conceived of as the ultimate (structured) whole (i.e., the ultimate categorical structure) which all entities are parts of, such that there is a downward necessitation from wholes to their parts (all the way down).

In sum, I submit that if we accept Priority monism as a good model to account for the Timaean mereological proposal (i.e., Platonic Cosmological Monism) (that is, conceived as a Cosmos-first and not as a Cosmos-only view, contra Existence monism), then we can better comprehend Plato’s understanding of the notion of ‘bond’ (δεσμός) (and of the relation of composition in the Timaeus), his warning at 53d4–7 about the metaphysical possibility of ‘more ultimate principles’ (ἄνωθεν ἀρχὰς), and his suggested methodology for the construction of the World Body and of the elemental bodies — in connection with the two-fold objective of my research (cf. Section I).
III. The Nature of Physical Properties: 

*Platonic Power-qualityism*

In the first chapter of the work, we have seen how the Timaean metaphysics, under its mereological side, may be read through the lenses of Priority monism, leading to the conclusion that Plato’s proposed picture of physical reality in the *Timaeus* is such that all entities asymmetrically depend on the Cosmos (which is the only *basic* entity), conceived of as the ultimate (structured) whole which all entities are parts of, such that there is a downward metaphysical necessitation from wholes to their parts (all the way down) — a view which I called *Platonic Cosmological Monism* (PCM). Now, in this second chapter, I shall investigate another crucial side of the Timaean metaphysics, namely the metaphysics of properties. The question concerning the nature of properties in the *Timaeus* (that is, the question of ‘how things are as they are’ in the Timaean Cosmos) was left open by the previous chapter — and in particular by that notion of ‘categorical structures’, which was systematically employed but never properly unpacked. Indeed, besides making a point about the mereological architecture of the Cosmos, in Chapter II, I proposed to conceive of entities as *essentially* structure-laden and yet as not entirely reducible to their structural element (cf. point a. of Section II.1.3). Thus, in the present chapter, I shall provide a more focussed treatment of that side of the Timaean metaphysical outlook and, specifically, I will aim to provide a reading of the Timaean metaphysics of properties as an instance of what I shall call *Platonic Power-qualityism* (PPQ). Platonic Power-qualityism is the view that (elemental) properties have a certain dual nature, such that, under its structural aspect, a property is defined on the basis of how it interacts with other properties (and thus the structural aspect of properties accounts for the nomic relations that preside over the causal functioning of the Cosmos); while, under its categorical aspect, a property is eminently phenomenal and constitutes the qualitative character of the world as it appears to us — where these ‘aspects’ are isolated *via* the *qua*-operator and are conceived of as nothing over and above the properties on which they supervene.
III.1 The *Metaphysical Set-up: What Are the Timaean Elements?*

In Section II.1.1, we have read *Timaeus* 31b4–32c4, and we have seen that, in the process of the construction of the Cosmos, the Demiurge puts together the four elements and generates the Body of the World (which was then revealed to be the fifth solid, the sphere (55c5)). Now, given that we know from 31b4–32c4 that the totality of physical reality is constituted by the four elements (which materially compose everything that there is and is physical), and we are to investigate the nature of physical reality in the *Timaeus*, we should start by studying the nature of the elements. Another way to put this would be to say that, if we are interested in investigating how (physical) things are as they are in the Timaean Cosmos (cf. the definition of ‘properties’ in Section I), and we know that, in the *Timaeus*, all (physical) things are constituted by the elements (cf. Zeyl 2000: xxxix), then, the best way to answer our research question is to study the precise nature of the elements (i.e., fire, water, earth and air). In short: as far as the *Timaeus* is concerned, the study of the physical properties is the study of the elemental properties.

### III.1.1 Elements as properties

As the main objective of the present section is to fix the proper nature of the elements, one point needs first and foremost to be established: for how they are treated in the *Timaeus*, I submit that elements are best conceived of as properties. In order to justify such a claim, let us start our reading from the description of the process of elemental change that Timaeus offers at 49b7–c7:

First, we see (or think we see) the thing that we have just now been calling water condensing and turning to stones and earth. Next, we see this same thing dissolving and dispersing, turning to wind and air, and air, when ignited, turning to fire. And then we see fire being condensed and extinguished and turning back to the form of air, and air coalescing and thickening and turning back into cloud and mist. When these are compressed still more we see them turning into flowing water, which we see turning to earth and stones once again. In this way, then, they transmit their coming to be one to the other in a cycle, or so it seems. 

(49b7–c7)

In the above passage, Timaeus puts forth a first account of the elements’ (inter-)transformation process, relying solely on the observational data — that is, on our familiar experience of the elements. Now, I believe that both accounts of the process of inter-transformation of the elements (namely, 49b7–c7 and 56d1–56e7) are essentially aimed at saying something about the nature of the elements — that is, of how elements are. In the case of 49b7–c7, this is confirmed by
Plato’s indication a few lines above, where he makes Timaeus state that it is necessary ‘to raise a preliminary puzzle about fire and the other three’ (49b1) — thus suggesting that the object of discussion of the immediately following passage will be the metaphysical status of the four elements. Now, the puzzle in question is anticipated by Plato at 49b3–7, and then made explicit right after the passage of the elemental change, that is, at the (‘much-misread’) 49c7–d3:

Now then, since none of these appears ever to remain the same, which one of them can one categorically assert, without embarrassment, to be some particular thing, this (τοῦτο) one, and not something else? One can’t.

(49c7–d3)

From the reading of the above passage, we learn that the puzzle consists of the impossibility of isolating the individual elements as distinct, self-standing entities — leading to a picture of the physical world as in perennial flux.11 More in detail, the point seems to be that, as they continuously change one into the other, one cannot produce conclusive statements on the nature of one individual element as to what it is and what it is not — that is, one cannot say of the element one is observing ‘this is fire’, because it may well be any other element (Miller 2003: 75). In this sense, the difficulty is often framed as a problem concerning the (proper) use of language (Cherniss 1954a; Lee 1967; Reed 1972; Zeyl 1975) — as one cannot, strictly speaking, denote what one is observing. Thus, there follows a discussion on how we should properly refer to the elements, given that, for how they are discussed in the passage on the elemental inter-transformation, they cannot be called οὐτοί:

Rather, the safest course by far is to propose that we speak about these things in the following way: what we invariably observe becoming different at different times—fire for example—to characterize that, i.e., fire, not as “this,” (τοῦτο) but each time as “what is such,” (τὸ τοιοῦτον) and speak of water not as “this,” but always as “what is such.” And never to speak of anything else as “this,” as though it has some stability, of all the things at which we point and use the expressions “that” and “this” and so think we are designating something. For it gets away without abiding the charge of “that” and “this,” or any other expression that indicts them of being stable. It is in fact safest not to refer to it by any of these expressions. Rather, “what is such”—coming around like what it was, again and again—that’s the thing to call it in each and every case. So fire and generally everything that has becoming—it is safest to call “what is altogether such.”

(49d3–c7)

11 This has been the orthodox, seemingly undisputed reading of the passage from Aristotle to the modern days. However, in the past seventy years the interpretation which sees the phenomenal particulars as in eternal flux has been re-assessed and brought into question — most notably by Owen (1953), Irwin (1977), and Cooper (1990).
The τοῦτο-τοιοῦτον passage is certainly one of the most commented in recent times. As far as my research goes, this is relevant as it clearly states that we should not refer to the elements as if they were individual entities (that is, as ὁ τοῦτο), but rather as τοιοῦτο, that is, as ‘what is such and such’. Now, there has been much debate on how we should conceive of the demonstrative correlative. I submit here that, as τοῦτο τοιοῦτον is the nominalised form, it hardly can be conceived of as referring directly to what precedes (i.e., e.g., ‘fire’), according to its most usual correlative function (cf. LSJ). On the contrary, I believe that the nominalised version of the pronoun is used here to denote the such and such aspect of that thing to which it is referring — such that τοῦτο refers to ‘the entity’, τοιοῦτον to ‘the property’ that the entity bears, and τὸ τοιοῦτον to ‘the entity for how it bears the property’. This leads to the conclusion that τὸ τοιοῦτον refers to a certain state of affairs (i.e., a certain entity bearing a certain property), and this state of affairs consists of ‘this’ (i.e., τοῦτο) bearing certain elemental (observable) properties — this is also defended by Zeyl (1975: 146–7). In this direction, the process of elemental change is deemed by Plato ‘problematic’ because it sheds light on a categorical error in our everyday practice of referring to the elements: we call them things, when we should call them properties — bearing in mind our preferred understanding of the notion of ‘property’ (cf. Section II). In sum, we can render my observation on how we should refer to the elements as follows:

**Elemental properties**: elements, as we refer to them in ordinary language, are properties, not things, that is, they describe a state of affairs of something (τοῦτο) being such and such (τοιοῦτον) — such that what we call ‘fire’ is a portion of the Receptacle (τοῦτο) bearing the property ‘fire’ (τοιοῦτον).

12 The interpretation of 49c7ff sparked a heated debate in classical scholarship, opposing ‘traditionalists’ (e.g., Cherniss 1954a, 1954b, 1957; Lee 1966, 1967; Mills 1968) and ‘reconstructionists’ (e.g., Gully 1960; Zeyl 1975; Mohr 1980) — for a fuller discussion see Silverman (1992). The traditional reading claims that one should not call fire, which is a case of becoming (γενόμενον), by the name of ‘this’ (τοῦτο) but rather we should refer to the entity as ‘such’ (τοιοῦτο) of that which is referring — such that is the nominalised form, it hardly can be conceived of as referring directly to what precedes (i.e., e.g., ‘fire’), according to its most usual correlative function (cf. LSJ). On the opposing side, reconstructionists hold that we should not refer to what is becoming by the name of ‘fire’, but we should call ‘fire’ only that which is on each occasion ‘such’ (τοιοῦτον) (Krása 2020: 134).

13 The bare idea that elements should be seen as properties has been recently defended by Karamanolis (2020) — however, the scholar does not advance a treatment of what kind of properties the elemental properties might be.

14 It should be noted that there might be some interesting affinities between the picture of physical reality advocated by the Existence monist with the notion of ‘bobject’ (that is, that there exists only one item, which exhibits structural and qualitative variability) and Plato’s account of the pre-cosmic state of affairs at 49c7–e7 (that is, before or in abstraction of the Demiurgic imposition of structure) — including the referential issues concerning the ordinary use of language that the passage famously presents. However, the affinity stops there. Indeed, we have seen how the (mereological) structure of priority/dependence relations (between entities) that is imposed by the Demiurge with the cosmopoiesis makes the overall picture of (cosmic) reality incompatible with Existence monism.
III.1.2 The Dual nature of the elements

Once having fixed the proper way we should refer to the elements (that is, the ontological category under which they fall), we can now proceed to study their nature in more detail.

We have seen in Section II.2.1 that the Demiurge uses six half-equilateral scalenes to compose the equilateral triangular face (which is common to the pyramid, the octahedron, and the icosahedron), and four isosceles to compose the square face of the cube, thus producing the four elemental solids, i.e., the cube, the pyramid, the octahedron, and the icosahedron (53c4–55c3). Once the construction is completed, the geometrical solids are assigned to the elemental bodies:

Let us now assign to fire, earth, water and air the structures which have just been given their formations in our speech. To earth let us give the cube, because of the four kinds of bodies earth is the most immobile and the most pliable—which is what the solid whose faces are the most secure must of necessity turn out to be, more so than the others. Now of the [right-angled] triangles we originally postulated, the face belonging to those that have equal sides has a greater natural stability than that belonging to triangles that have unequal sides, and the surface that is composed of the two triangles, the equilateral quadrangle [the square], holds its position with greater stability than does the equilateral triangle, both in their parts and as wholes. Hence, if we assign this solid figure to earth, we are preserving our “likely account.” And of the solid figures that are left, we shall next assign the least mobile of them to water, to fire the most mobile, and to air the one in between. [...] So let us follow our account, which is not only likely but also correct, and take the solid form of the pyramid that we saw constructed as the element or the seed of fire. And let us say that the second form in order of generation is that of air, and the third that of water.

In the above passage, we can read how the geometrical solids that have just been created are now assigned to the elements. Specifically, the cube, which is the only solid composed by the isosceles triangles, is assigned to earth; while the pyramid, the octahedron, the icosahedron, which are all composed via the half-equilateral scalenes, are assigned to fire, air, and water, respectively — such that fire is the lightest and most mobile of all, and earth is the most stable.

Before moving on to the analysis of the passage, we ought to consider another portion of text, which will help to further clarify the precise metaphysical profile of the elements:

Indeed, it is a fact that before this took place the four kinds all lacked proportion and measure, and at the time the ordering of the universe was undertaken, fire, water, earth and air initially possessed certain traces of what they are now. They were indeed in the condition one would expect thoroughly god-forsaken things to be in. So, finding them in this natural condition, the first thing the god then did was to give them their distinctive shapes, using forms and numbers.

The above passage immediately precedes Timaeus’ account of the process of shaping [of the elements] into διεσχηματίσατο the geometrical solids and specifies that the ordering activity of
the Demiurge (which is carried through by means of ‘forms and numbers’ (εἴδεσί τε καὶ ἀριθμοῖς) is enacted upon some pre-existing ‘traces’ (ἰχνη) of the elements, that is, on the elements in their ‘natural condition’ (σφυκότα).

Now, from a joint reading of the two passages (55d6–56b6 and 53a9–b5), we can isolate a second claim which seems to serve as a central tenet of Plato’s understanding of the nature of the elements: the regular solids and the elements are (in principle) metaphysically separate, such that the elements considered as regular solids do not exhaust the full nature of the elements. A couple of points here. First of all, from the reading of the two passages, it seems that the cosmic elements are not reducible to the geometrical solids whose composition is accounted for at 55c4–55c3 — indeed, the bare fact that some qualities of the elements are present in the Receptacle before the cosmopoietic intervention of the Demiurge “does not seem to be in doubt” (Van Riel 2020: 174). That is to say that, while the elements are instances of the regular solids (55d6–56b6), and the cosmopoietic action of the Demiurge consists precisely in the shaping of these ‘traces’ (ἰχνη) into the geometrical figures (53a9–b5), the elements’ being regular solids (i.e., their being qua polyhedra), with all the relevant features that this brings about (cf. Section III.2.1), is not all there is to the elements. Indeed, as the opening line of the above passage remarks, after having constructed the regular structures (γένη), the Demiurge ‘distributed’ (διανείμωμεν) these to the elemental bodies — as, e.g., to ‘earth we shall give the cubical form’ (γῇ μὲν δὴ τὸ κοβικὸν εἶδος δώμεν). Secondly, while we should take the ‘pyramidal solid’ (τῆς πυραμίδος στερεὸν), as it has been constructed, to be the ‘element’ (στοιχεῖον) and ‘seed’ (σπέρμα) of fire, the contrary does not hold, such that the element of fire is not (only) the pyramid — meaning that they are not identical. Thus, Plato’s phrasing in the above passage and his use of verbs such as διδόμεν (55d8), διανέμω (55d9), and ἀπονέμω (56a1) (which suggest the assignation of an individual entity to another individual entity), all point in the direction that the regular figures (εἴδος) and the elemental bodies (στοιχεῖον, σπέρμα) are (in principle) metaphysically separate and distinct — such that the ‘pyramidal solid’ and the ‘element of fire’ are not identical.15

This overall picture leads to the conclusion that, even though (in the fully formed Cosmos) the elements are indeed shaped according to the regular figures (such that, as we shall see, their aspect qua regular solids is metaphysically essential), there is some exceeding, categorical nature to them, that is, a nature which is entirely independent of their nature as instances of the regular shapes (i.e., their being qua regular solids) — given that, again, “the qualities of the four elements were there, before the Demiurge’s intervention” (Van Riel 2020: 175). In sum,

15 This does not mean that they are modally separable, such that they can exist independently one of the other — a fuller and more detailed discussion of this will be offered in Sections III.3 and III.4.2.
from the reading of 55d6–56b6 and 53a9–b5, we have a first characterisation of the metephysical profile of the elemental properties in the *Timaeus*:

**Dual nature:** the elements, as described in the *Timaeus* (with reference to the cosmic state of affairs), have some sort of a dual nature, insofar as they are *qua* regular solids, but also have a categorical aspect (that is, one which exceeds their being instances of the regular solids, and is described as their ‘natural condition’) — such that the element’s being *qua* regular solids does not exhaust the full nature of the elements.

One final note. It should be emphasised that my understanding of Dual nature is (to some extent) compatible with the two (otherwise opposed) accounts of the pre-Cosmos offered by Mohr (1985) and by Gill (1987). Both scholars agree that the qualities of the elements are found in the constituent elements as they are in the Receptacle (cf. Mohr 1985: 109; Gill 1987: 47–53; cf. also Crombie 1962–3: ii.219–223) — as Silverman puts it: “what is missing in the bodies of chaos is only the regularized shapes of the molecules, not the properties of fire, water etc.” (2002: 98).

### III.1.3 The big picture

In Chapter II (i.e., II.1.2; point a. in II.1.3), I have emphasised that, even though entities are essentially structure-laden, their structural aspect (i.e., the internal configuration of the relations that hold between their components) does not exhaust their full nature — and I have argued for this via an analysis of the role of water and air at *Timaeus* 31b4–32c4 (which I ultimately named *Elements as realisers*). Indeed, I maintained that the Demiurge does not put water and air in between fire and earth to constitute the composition (of the World Body) but to realise it. Thus, the proper agent of composition (δεσμός) is the internal structure of the relations that hold between the four elements (i.e., ἀναλογία), and water and air are added only to realise the composition — to yield the World Body *qua* whole of parts. However, water and air (just like earth and fire) constitute the necessary conditions without which the World Body could not have been realised. That is to say that, even though it is not the case that water and air are the agents of composition, they are not irrelevant to the nature of the whole — for they constitute (together with earth and fire) the categorical aspect of the World Body.16

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16 In Chapter II, I have exploited this understanding of the composition of the World Body and of the physical entities to inform my reading of the mereological structure of the Timaean Cosmos, such that all entities asymmetically depend on the only basic entity, namely, the Cosmos as a whole.
This being said, in light of what has been argued in the present section (i.e., III.1.1 and III.1.2), and, specifically, thanks to the introduction of Dual nature, we now have a clearer picture of the metaphysical nature of the composites (e.g., the World Body): entities should be regarded as having two aspects (both necessary, but neither sufficient), one of which is purely structural (which corresponds to the order of the phonemes in the syllable ‘kæt’, and the ἀναλογία in which the elements stand in the World Body), and one which is purely categorical (which corresponds to the elements taken in isolation from the World Body). Accordingly, in the case of physical properties (such as the elements), we can see how these have a purely structural aspect (i.e., their being qua regular solids) and a purely categorical one, such that neither the purely structural, nor the purely categorical aspect alone, exhaust the full nature of the elements—where these ‘aspects’ are nothing over and above the overall property (cf. II.1.2, II.1.3).

III.2 The Nature of the Elements: Structures and Qualities

In the previous section, we have seen how the elements are best conceived of as properties (and not things), and how they instantiate a certain dual nature — and thus we have outlined the basic metaphysical set-up of what one should take the elements to be in the Timaeus. The next step would be investigating the status and role of the two ‘aspects’ that the elemental properties exhibit — and I shall do so starting from the one aspect about whose metaphysical profile we already have some indications, namely, what I have hitherto called ‘elements qua regular solids’.

III.2.1 Elements qua polyhedra and the elements’ nomic profile

As anticipated, in the present section of the work, I shall study the precise nature of this first ‘aspect’ of the elements, that is, their being qua regular solids. To this extent, we ought to (re-)consider three passages, which have already been introduced, namely, 55d6–56b6, and the two descriptions of the inter-transformation of the elements (i.e., 49b7–c6 and 56d1–57b7).

First of all, from the reading of 55d6–56b6, one might get the impression that the Demiurgic assignation of the geometrical solids to the elements is carried through to account for some essential characteristics that the elements display in nature (cf. Zeyl 2000: lxx). Indeed, Timaeus suggests that there are two main criteria that guide the attribution process: lightness and mobility. To this extent, earth, which is the most stable and pliable element, is given the cube, whose faces can grant that kind of natural stability that is proper of the corresponding element. Similarly, to fire is assigned the solid which, having the least number of faces, is the
lightest; and, having the sharpest edges, is the most mobile. Thus, from the cases of earth and fire, we can see how the different solids are assigned to the different elements as they capture some essential features of their corresponding elements. These features, however, seem to be related to how the different elements interact with each other in nature, that is, to their *natural behaviour* — such that, e.g., earth is assigned the cube, as the faces of the cube can account for the natural stability of earth, and fire is assigned the pyramid, for the (low) number of the triangles that make up the pyramid can account for the volatility of fire.

In order to verify this preliminary interpretation, let us consider (again) the two different descriptions of the process of inter-transformation of the elements that Timaeus offers at 49b7–c7 and at 56d1–56e7.

As already argued in Section III.1.1, at 49b7–c7, Timaeus seems to be offering an account of the *nature* of the elements — an account which presents a puzzle, as the fleeting appearance of the elements does not allow us to refer to the elements as to stable entities. In this direction, in order to provide a determinate account of what elements are, the regular solids are introduced and then assigned to the elements. Then, the account of the inter-transformation of the elements is reformulated in light of the construction of the regular solids (and of the assignation of the solids to the elements):

When earth encounters fire and is broken up by fire’s sharpness, it will drift about — whether the breaking up occurred within fire itself, or within a mass of air or water — until its parts meet again somewhere, refit themselves together and become earth again. The reason is that the parts of earth will never pass into another form. But when water is broken up into parts by fire or even by air, it could happen that the parts recombine to form one corpuscle of fire and two of air. And the fragments of air could produce, from any single particle that is broken up, two fire corpuscles. And conversely, whenever a small amount of fire is enveloped by a large quantity of air or water or perhaps earth and is agitated inside them as they move, and in spite of its resistance is beaten and shattered to bits, then any two fire corpuscles may combine to constitute a single form of air. And when air is overpowered and broken down, then two and one half entire forms of air will be consolidated into a single, entire form of water.

In this second picture of the elemental change, Timaeus elaborates on the main characteristics of the geometrical solids and links them to the inter-transformation cycle that the elements undergo in nature. The account runs roughly as follows. Water is broken by the sharpness of fire (or by air), and the resultant parts can recombine directly into two units of fire or into one of air, which (when broken) can recombine into two units of fire — this constitutes the top-down side of the cycle (i.e., from larger to smaller). On the other hand, when fire is encircled by a major amount of water or air, its faces break down, and their parts can recombine into a particle of air; and when this unit of air is similarly broken down, it can recombine (with other particles of air), to yield a particle of water — thus concluding the bottom-up part of the cycle.
This being said, from the reading of 55d6–56b6, I proposed that the assignation of the solids to the elements (that is, the elements \textit{qua} solids) was essentially aimed at accounting for some of the essential characteristics of how the elements behave in nature (cf. Silverman 1992: 98). Along the same lines, at both 49b7–c7 and 56d1–56e7, we are presented with a description of how the elements are — that is, an account of the nature of the elements \textit{as properties} (cf. Section III.1.1). However, it is only at 56d1–56e7, where the ‘Elements \textit{qua} polyhedra’ is explicitly discussed, that the description of how the elemental properties are (i.e., the account of their nature \textit{qua} regular solids) is linked to how the properties relate to each other — that is, how they \textit{behave} in nature. This is to say that, from the reading of 56d1–56e7, if we were to ask ‘what is fire?’, one would reply that ‘fire is that thing such that, when it is enclosed by a large amount of water or air, it recombines into air’; similarly, if we were to ask ‘what is air?’, one would say that ‘air is that thing such that, when broken by the sharpness of the particles of fire, turns into fire’ — and so on for the remaining elements.

In this direction, it seems that descriptions of the elements offered at 56d1–56e7 (that is, of the elemental properties \textit{qua} regular solids) account for the properties in question through the relations that hold between those properties and the other properties, that is, they describe the \textit{nomic profile} of the properties — such that the description of the property is of the following form: ‘F is such that, when circumstances \textit{xyz} are met, then G’. Further, this explains why to each element is assigned a precise solid, that is, because only the mathematical-geometrical (i.e., structural) characteristics of that particular solid can account for the \textit{nomic role} of that particular element in nature — that is, e.g., only the description of fire \textit{qua} pyramid (cf. 56d1–56e7) can explain the \textit{essential} feature of fire such that when it is condensed it becomes air (cf. 49b7–c6).

In sum, from the joint reading of 55d6–56b6, 49b7–c6, and 56d1–56e7, we have achieved a second characterisation of the metaphysical profile of the elemental properties:

\textit{Elements \textit{qua} polyhedra}: the first aspect of the (dual) nature of the elements, namely the elements conceived of \textit{qua} regular solids, refers to the \textit{nomic profile} of the elemental properties — such that the aspect ‘elements \textit{qua} regular figures’ accounts for how the elements relate to each other and thus how they \textit{behave} in nature.

There is one further (\textit{epistemological}) point that follows from what has been hitherto argued, and that should be emphasised. In Section III.1.2, we have considered 53a9–b5, and we have established that, in the dialogue, the elements seem to be described as having a certain dual nature. However, in the same passage, it is also said that the \textit{cosmopoietic} action of the Demiurge on the elements, which is enacted on them in their ‘natural condition’ and led to their actual,
cosmic condition, that is, as involving a certain nature \textit{qua} regular solids, consisted in ‘shaping’ them (διασχηματιζω), by means of ‘numbers’ (ἀριθμοῖ) and ‘shapes’ (εἴδεοι). Now, considering what has been argued in the present section (i.e., that the ‘elements \textit{qua} polyhedra’ captures their nomic profile) and indeed in Sections II.2.1–II.2.3 (that the elements, just like the triangles they are composed of, are essentially structured entities), this should not come as a surprise. Thus, \textit{prima facie}, it may seem that from the latter claim it follows that one could \textit{entirely} describe the nature of \textit{Elements \textit{qua} polyhedra} (that is, their nomic role) \textit{via} the study of the numbers and shapes that they instantiate — and thus, using a \textit{purely quantitative} language.

In sum, we can add a further specification to our working profile of the elements:

\textbf{Mathematical quantifiability:} the \textit{Elements \textit{qua} polyhedra} aspect of the elements is \textit{fully} and \textit{solely} accountable for \textit{via} a purely quantitative language (i.e., \textit{via} numbers and shapes).

A further interesting aspect of \textit{Mathematical quantifiability} is that, if this is reasonable, we might find a striking correspondence between our proposed account of (the aspect of) \textit{Elements \textit{qua} polyhedra} and Plato’s overall understanding of the \textit{role and object of science} in his late production. Focussing on the \textit{Sophist}, Harte holds that the proper object of science is “the ways in which names and verbs—the relevant positions—do and do not combine, i.e., to study the relationships in which they stand to one another” (2002: 175). Now, abstracting away from the linguistic and phonetic context of the \textit{Sophist} (to the Platonic later production in general), science seems to be the proper \textit{method} (cf. \textit{Philebus} 16c9–e2) of access to and study of the structural aspect of physical reality, the aspect which can be expressed \textit{via} a purely mathematico-nomic language — which seems to be precisely the aspect of reality that is captured by \textit{Elements \textit{qua} polyhedra}.

\textbf{III.2.2 Elements \textit{qua} qualia and the phenomenal appearance of nature}

Up to this point, we have established that elements should be treated as \textit{properties}, and not as \textit{things} (i.e., \textit{Elemental properties}) (cf. Section III.1.1); we have proposed and defended the view that elements instantiate a certain \textit{dual nature} (cf. Section III.1.2); and, finally, we have clarified that the structural (and fully quantitatively describable, cf. \textit{Mathematical quantifiability}) aspect of the elements captures their nomic role (i.e., \textit{Elements \textit{qua} polyhedra}) (cf. Section III.2.1). But now a new question is outstanding: if we determined that these properties have a dual nature and that their aspect \textit{qua} regular solids does not exhaust the full nature of such properties, what would be the nature of the other essential aspect of the elements (that is, the \textit{categorical} one)? To answer this, we should first consider 51a4–b6:
This, of course, is the reason why we shouldn’t call the mother or receptacle of what has come to be, of what is visible or perceivable in every other way, either earth or air, fire or water, or any of their compounds or their constituents. But if we speak of it as an invisible and characterless sort of thing, one that receives all things and shares in a most perplexing way in what is intelligible, a thing extremely difficult to comprehend, we shall not be misled. And in so far as it is possible to arrive at its nature on the basis of what we’ve said so far, the most correct way to speak of it may well be this: the part of it that is made burning hot (πεπυρωμένον μέρος) appears on each occasion as fire, the dampened part (τὸ δὲ ἔγρανθέν) as water, and parts as earth or air in so far as it receives the imitations of these.

From what we can read in the passage, as it was already stated by Plato at the beginning of this second part of the dialogue (i.e., starting from 47e), τὸῦτο, that is, the stable entity which resists change and bears the elemental properties (such that it motives the article in τὸ τοιοῦτον), is the Receptacle of Becoming.\(^{17}\)

However, at 54a4–b6, we learn something more about the Receptacle as a τὸ τοιοῦτον (that is, about the Receptacle as the bearer of the elemental properties) — and thus about the nature of the properties themselves (that is, of the τοιοῦτον). Specifically, I would like to draw attention to two terms that are used to qualify the state of affairs of ‘the Receptacle bearing the property of fire’ and of ‘the Receptacle bearing the property of water’ at 51b4–5, and these terms are ‘πεπυρωμένον’ and ‘ἔγρανθέν’ — let us consider them in order.

First of all, the most straightforward translation for the middle passive participle perfect form of πυρόω (i.e., πεπυρωμένον) would be ‘burnt up with fire’. However, such a translation is not of great help for our purposes: as we are asking ‘what is the nature of the property fire?’, to reply ‘the nature of the property fire is such that, when something bears the property, that thing is burnt up with fire’ is not really informative. Consider that, when we ask, ‘what is the nature of the property fire?’; we are looking for some characterisations of that particular property, by means of which we would be able to pick that particular property out of the sum of the totality of properties. In this direction, as we have seen in Section III.2.1, a good reply to our question would be of the form ‘the nature of the property X is such that, when circumstances F are met, it disposes its bearer to G’ (i.e., our Elements qua polyhedra) — in the case of fire, this would be ‘the nature of the property of fire is such that, when it is enclosed by a large amount of water or air, it disposes its bearer to recombine into air’. However, as we have seen in Section III.2.1, the latter description (i.e., Elements qua polyhedra) does not represent a full description of the nature of the elemental properties — such that the Elements qua polyhedra

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17 This has been contested by Gill, who thinks that τοῖτο properly refers to the Forms (1987: 43). This being said, this does not bear much relevance for my argument, as I am here only interested in the nature of the elemental properties (and not in the stable entity that bears such properties).
aspect does not exhaust the full nature of the elemental properties. In light of this, we may advance a different translation for πεπυρωμένον μέρος, namely ‘the part that is made burning hot’ (and the same goes for πυρουμένην at 52d5) — that is, stressing the phenomenal, qualitative aspect of the term.

Secondly, if the need for a translation which would acknowledge the qualitative side of the elemental properties might be hard to see in the case of πεπυρωμένον, it certainly is not with ὑγρανθὲν — which is aptly rendered by Zeyl (2000) as ‘dampened’. In fact, ὑγρανθὲν can surely be translated as ‘being made liquid’, but it seems to me that, following the most common translation of the term, we should render it as ‘being made wet’ — and the same goes for ὑγραινομένην at 52d5.

Now, my recommended translations are aimed at emphasising that, in their condition of ‘traces’ in the pre-cosmic Receptacle, the elements are primarily presented as phenomenal, sensible properties (a concept that is often referred to in modern literature with the notion of qualia); that is, how they are in our familiar experience of them — such that ‘fire’ is the property of being ‘burning hot’ and water is the property of being ‘wet’ (cf. Van Riel 2020: 175). In this direction, I believe it is not a coincidence that the two terms in question always occur (in the Timaeus) in contexts where they are to convey the idea of some sort of ‘felt quality’ (or quale). First of all, πεπυρωμένον occurs only in two places in the dialogue, namely 51b4 and 52b5. Secondly, and more interestingly, ὑγρανθὲν (and cognate forms) occurs in four places: two we have already considered (i.e., 51b5 and 52b5), and the remaining two are ‘ὑγραινομένου’ at 86d5 and ‘ὑγραινομένου’ at 88d3. Now, at 86d5, ὑγραινω is used to indicate the quality of the substance that causes sexual incontinence (one of the diseases of the soul), which is said to run through the body and ‘make it wet’ — it surely does not make it liquified. The context of the other occurrence, at 88d3, is similar: here it is said that the body is kindled or cooled by the things that go inside it and, in turn, is dried up or ‘made humid’ by the things that are outside. In sum, in light of the study of the occurrences of the two terms in the dialogue, I believe that it is safe to say that the terms refer to a certain qualitative aspect of the property.

My proposed interpretation of the elements ‘πέφυκεν’ as essentially qualitative may be further strengthened by a (now more informed) reading of one passage which we already considered in Section III.1.2. At 53a9–b5, we read that the Demiurge finds the elements in their ‘natural condition’ (πεφυκότα) and thus that he gives them shape by means of ‘shapes and numbers’ (εἰδεσεὶ τε καὶ ἀριθμοῖς). Now, from this, it follows one significant consequence. If the cosmopoietic act of the Demiurge consists of imposing order upon the ‘traces’ of the elements, it means that the traces entirely lacked any measure and order; if order is imposed via the shaping
of the traces according to *number and shapes*, then the traces lacked any shape or number; if the presence of number and shapes is necessary for something to have a precise quantitative (relational) nature, then the traces cannot have any quantitative or relational nature. Now, as is clear, the bare fact that the traces cannot be *essentially* characterised *quantitatively* cannot be taken alone to entail that they then have an *essentially qualitative* nature. However, if the above analysis of 53a9–b5 is taken together with our recommended interpretation of πεπυρωμένον and ἕγραμθεν at 51b4–5 (that is, of the terms as denoting a certain qualitative aspect of the properties), then, I believe it leads to the conclusion that what I have hitherto called the ‘elements πέφυκεν’ (that is, the categorical aspect of the elements) refers to the *qualitative, phenomenal* aspect of the nature of the elemental properties (that is, of the elements as *qualia* — a similar reading (even though not exactly the same) is also defended in scholarship by Cornford (1937: 181), Gulley (1960: 54), and Zeyl (1975: 139).

In sum, we can add a further element to our building account of the metaphysical profile of the elemental properties in the *Timaeus*:

**Elements qua qualia**: the aspect of the nature of the elemental properties which we have called elements πέφυκεν (that is, the categorical aspect) is to be understood not only as non-relational and non-quantitative, but as *phenomenal* and *qualitative* (i.e., as a quale).

With *Elements qua qualia* in place, we have now an almost complete account of the nature of elemental properties. As for scholarship, it should be emphasised that the idea that the *qualities* of the elements are already present in the Receptacle (which, however, lacks the stabilised, ordered form of the elemental molecules) is discussed and endorsed by Mohr (1985: 109), Gill (1987: 47–53), Crombie (1962–3: ii.219–223), and Silverman (1992: 98), *inter alia*.

### III.2.3 The big picture

Now, if one considers the picture that I have been tracing in this second chapter of the present work, one can easily discover that what I now call *Elements qua polyhedra* (that is, the structural aspect of the elements) and *Elements qua qualia* (that is, the categorical aspect of the elements) constitute the missing pieces from the outlook that I have presented in Chapter II.

Consider again my arguments so far. In Chapter II, with my proposed *Elements as realisers* interpretation (cf. Section II.1.2) and my reading of the metaphysical structure of the World Body (cf. Section II.1.3), I have argued that entities can be said to be essentially structure-laden
as they gain their metaphysical identity in virtue of standing in certain relations with each other (that is, they have an intrinsic nomic role), while this ‘being essentially structure-laden’ does not exhaust their full nature. Now, the Elements qua polyhedra aspect outlined in Section III.2.1, denotes precisely what, in Chapter II, has been referred to with the notion of ‘structure’ and of ‘structure-laden’. Indeed, as we have seen in Sections II.1.2–II.1.3, entities can be said to be essentially structure-laden as they are metaphysically defined in virtue of the position they occupy in the structure — recall Harte’s example of the English syllable ‘kæt’. In this direction, there is a sense in which one could describe the complete extrinsic profile, or nomic role, of an entity by looking at the relations that the entity entertains with the other elements that compose the structure that entity is a part of. On the other hand, in Section III.2.2, I have completed the picture that was still fragmentary, by providing an account of that categorical aspect of the nature of the elemental properties which was left unexplored by Chapter II. Specifically, I have clarified that the other aspect, the purely non-structural one, must be seen as capturing the status of the elements in their natural condition, thus capturing their categorical nature (that is, independent of structure), and that it is best conceived as phenomenal in nature (such that it is not accountable for via the mathematico-nomic language of physical science).

This all being said, yet one more issue is still left on the table: the metaphysical relationship that holds between the property as a whole, its two aspects (namely, Elements qua polyhedra and Elements qua qualia), and the overall metaphysical structure of physical reality.

III.3 The Role of the Elemental Aspects: The Make-up of Nature

From the previous sections, we have a seemingly complete picture of the ontological status and metaphysical constitution of the elemental properties, and of their aspects. Now, in this section, I will clarify the relationship between the Elements qua polyhedra aspect, the Elements qua qualia aspect, and the elemental properties conceived of as a whole — and I shall thus discuss the aspects’ (and the property’s) contributions to the overall structure of the natural world.

In order to see how both aspects (namely, Elements qua qualia and Elements qua polyhedra) are needed to account for the physical reality as it appears to us, let us proceed through some sort of a via negativa and consider the alternative position — that is, the one according to which the elements are just (or relevantly) polyhedra. Verity Harte has a similar view: she believes that the affective qualities of the elements are directly traced to the geometrical properties of the shape of the solids with which the elements have been identified (cf. 2002: 260). More in detail,
according to this reading, the geometrical features of the elements are directly responsible for and are constitutive of the perceptible qualities of the elements, such that, in our preferred terms, the qualitative ‘hotness’ of fire (i.e., the ‘elements qua qualia’ aspect of fire) is fully and solely constituted and entirely reducible to the quantitative pyramidal structure of fire (i.e., the ‘elements qua polyhedra’ aspect of fire) — I shall call this view Structuralism about the elements (in short: Structuralism). Thus, Structuralism may be construed as the view that there is no nature to the elements that is independent of their nature qua regular solids (i.e., Elements qua polyhedra). Needless to say that, if Structuralism were true, our account of the metaphysics of properties in the Timaeus should be abandoned altogether — as the view is in direct tension with Dual nature.

Nevertheless, I believe that the structuralist view is exposed to (at least) two difficulties. First of all, we have an interpretative issue. From Structuralism should follow that, if we do not have the regular solids, then we should not have the elements — given that fire consists only of the pyramid. Yet, as we have seen in Section III.1.2, Plato is clear in stating that ‘traces’ of the elements are present in the Receptacle (53b1) — that is, in abstraction of (or before) the Demiurgic imposition of structure. Alternatively, the structuralist might say that the elements are not only the polyhedra, but are relevantly polyhedra — such that what I call Elements qua qualia is there, but is metaphysically inert (or epiphenomenal) towards the constitution of physical reality. However, at 30a2–6, we read that, to enact his cosmopoietic action, the Demiurge ‘took over all that was visible’ (πᾶν ὅσον ἤκουσεν παράλαβεν), which might seem to constitute strong textual evidence for the perceptibility of the elements in the Receptacle, that is, in abstraction of structure (Van Riel 2020: 172–173) — I shall return to this crucial point in Section IV.2.2.

Then we have a conceptual difficulty. Recall the general form of the definition of properties under their purely structural aspect that I have advanced in Section III.2.1: the definition of property F is such that ‘F is such that, when some circumstances are met, then G’. Now, imagine that Structuralism is true (and thus that the above description is a full description of the nature of property F), and that I really want to know the nature of F. Thus, I ask the structuralist about the nature of property F, and she tells me: ‘Easy: the nature of F is such that, when circumstances are met, then G’. But now, to know the nature of F, I need to know the nature of property G. Thus, I ask the structuralist about the nature of G, and she goes: ‘Easy: the nature of G is such that, when circumstances are met, then H’. As is clear, I could go on and ask the structuralist about the nature of H, but I think the reader gets where this is going — I will never know the nature of F. The crux here seems to be that, if Structuralism

18 There is an interesting question to be asked about this argument, that is, whether this is the kind of regress that Aristotle (assuming he was the author) had in mind at Protrepticus, 52.20–53.2.
were true, and thus all properties were essentially and solely relational properties (that is, of the form outlined above), the physical reality would turn out to be entirely unintelligible — that is, we would never be able to know the very nature of properties. In this direction, some have argued that views such as my proposed Structuralism are untenable, for relational properties (and causal powers in particular) are too metaphysically thin to constitute the complete nature of concrete objects (cf. Armstrong 1997: 80; Goff 2017: 140; Mørch 2018: 1076–1077) — and that, thus, we need some categorical properties to ground relations.19

Now, the discussion about Structuralism prompts us to focus on the contribution that the two aspects (namely, Elements qua polyhedra and Elements qua qualia) make to the metaphysical profile of the elemental property, and thus to think of the role of the elemental properties in the make-up of physical reality. Let us briefly reconsider what my analysis has achieved so far. As they are described in the Timaeus, the elements (which are properties, not things) have some sort of a dual nature, such that both aspects of the elemental properties are essential to the properties themselves. The first aspect of the (dual) nature of the elements, namely Elements qua polyhedra, refers to the nomic profile of the elemental properties, is entirely accountable for via a purely quantitative language (i.e., via only numbers and shapes), and constitutes the proper object of the physical sciences. The second (categorical) aspect of the (dual) nature of the elements, namely, Elements qua qualia, is to be understood non only as non-relational and non-quantitative (cf. 53a9–b5), but as phenomenal and qualitative (cf. πεπυρωμένον and ὑγρανθὲν at 51b4–5). From the comparison with Structuralism, then, we can now understand how both aspects of the properties play different but equally essential roles towards the constitution of the nature of the property as a whole: while the role of the structural aspect (i.e., Elements qua polyhedra) of properties is to activate their causal capacities (i.e., to determine their nomic profile), the role of the categorical aspect (i.e., Elements qua qualia) of properties is to provide ground for the phenomenal appearance of the observable world. We can formulate the latter claim as follows:

Metaphysical contributions: the metaphysical contribution of the structural aspect (i.e., Elements qua polyhedra) to (the nature of) the elemental property is to constitute its nomic role (thus activating its causal capacities); while the metaphysical contribution of the categorical aspect of an elemental property (i.e., Elements qua qualia) is to ground the phenomenal appearance of the property in the observable world — such that both aspects play essential but different roles towards the nature of the elemental property.

19 Against the metaphysical possibility of “bare structure worlds” (that is, worlds where the structural aspect exhausts the intrinsic nature of entities) see also Unger (1998) and Heil (2012).
In order to clarify the importance of *Metaphysical contributions* in the Timaean context, consider what the overall picture of reality would be like without either one of the two aspects — that is, in case one of the two aspects were deemed *not essential* to the nature of properties. In absence of the order imparted by the Demiurge, we would only have chaos (cf. 53a9), and things could not (causally) interact with each other in an orderly manner; on the other hand, if there were only the regular solids but no elements to assign them to, the Cosmos would end up being populated only by purely mathematical entities (cf. Koslicki 2002: 495; 2008: 107). It seems clear, then, that both aspects of the elemental properties (i.e., the structural one and the categorical one) are needed (and are to be deemed *essential*) to yield the world as we observe it.

With *Metaphysical contributions* finally in place, we are now in the position of providing a formulation for my proposed account of the metaphysics of properties in the *Timaeus*:

**Timaean Metaphysics of Properties:** elements are properties (i.e., *Elemental properties*) and have a dual nature (i.e., *Dual nature*). Under its *structural aspect*, a property is defined on the basis of how it interacts with other properties (and thus the structural aspect of properties accounts for the nomic relations that preside over the causal functioning of the Cosmos) (i.e., *Elements qua polyhedra*) — and it is entirely accountable for via the quantitative language of physical science (i.e., *Mathematical quantifiability*). Under its *categorical aspect*, a property is eminently phenomenal (i.e., *Elements qua qualia*) and constitutes the qualitative appearance of the natural world (i.e., *Metaphysical contributions*).

### III.4 Platonic Power-qualityism

In order to best characterise Plato’s understanding of the metaphysics of properties in the *Timaeus* (i.e., *Timaean Metaphysics of Properties*), in this final section of the chapter, I shall introduce and discuss some of the views which are currently at the centre of the debate in contemporary metaphysics. Ultimately, I shall argue that Plato’s view (for how I reconstructed it) may be seen to share some relevant traits with a theory that, in the past few years, has been consistently drawing significant scholarly interest: the *Powerful Qualities View*.

### III.4.1 Dispositionalism, Categoricalism, and the search for the Third Way

Traditionally, the debate on the nature of properties has been a two-front dispute. On the one side, there are *categoricalists*, that is, those who believe that all structural or relational properties need some sort of *categorical ground* (Russell 1927; Armstrong 1978, 1997; Lowe 2006; Seager
where categorical properties are generally defined as features that are “here and now, actual, not merely potential” (Heil 2012: 59) and as the “ways things are” (Heil 2010: 70). On the other side, there are dispositionalists (also known as pure powers theorists), that is, those who believe that all (or most) properties are essentially dispositional, such that properties are constituted by what they dispose their bearers to do (Shoemaker 1980; Hawthorne 2001; Ellis 2002, 2013; Mumford 2004, 2006; Bird 2007a, 2007b, 2013). On one thing most metaphysicians seemed to agree: dispositional properties and categorical properties are separate, distinct, and mutually exclusive kinds of properties (cf. Bird 2007a: 66–67; 2007b: 514; Armstrong 1997: 69) — they are “just different”, as Armstrong puts it (2005: 315).

This being said, in recent years, philosophers have started re-thinking the traditional divide between dispositionalism and categoricalism — even questioning the actual difference between the two kinds of properties. This reconsideration of the nature of dispositional and categorical properties (and of the relationship between them) led to a family of views, which is now generally referred to as Powerful Qualities View (PQV). In its basic formulation, PQV holds that all properties are essentially both dispositional and categorical, as opposed to purely one or the other (cf. Heil 2003: 111; Martin 2008: 33, 64; Mørch 2018: 1079; Livanios 2020: 280; Giannotti 2019: sections 3 and 4). As one might expect, the view comes in different flavours — mainly depending on what one takes ‘dispositionality’ and ‘categoricality’ to be, and their relationship with the property to consist of. As things stand now, I believe it is safe to say that the Identity theory represents the most popular version of PQV (cf. Taylor 2018: 1424; Livanios 2020: 280). According to the Identity theory, the dispositionality, the categoricality, and the property are all identical (Heil 2003: 111; Martin 2008: 65; Martin and Heil 1999: 46–47; Taylor 2018: 1424), such that the distinction between ‘dispositionality’ and ‘categoricality’ remains, but it is only ‘conceptual’ — that is, as ‘ways of considering’ one and the same property (Giannotti 2019: section 2). An alternative version of PQV, which is gaining some traction in recent literature, is the Compound view. The Compound advocate believes that ‘dispositionality’ and ‘categoricality’ are mereologically distinct, separate parts that each property has essentially, such that each property is essentially categorical and essentially dispositional, but neither

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20 There are also mixed view, such as Ellis’ (2001, 2002, 2013) and Molnar’s (2003) dispositional essentialism.


22 Taylor argued that the Identity theory collapses into the pure powers view (2018, 2019; cf. also Dondoni 2021).
‘dispositionality’ nor ‘categoricality’ exhaust the full nature of the property alone (cf. Taylor 2018: 1438–1439; Giannotti 2019: section 4, 2021: 10–14; Livanios 2020: 248; Dondoni 2021: section 6.1). Finally, there is a (less committal) third option, which sees ‘dispositionality’ and ‘categoricality’ as *features* or *aspects* of properties (rather than *kinds* of properties) — and is thus not committed to any strong identity claim (*contra* the Identity theory) or to any strong notion of (mereological) parts of properties (*contra* the Compound view).

Now, one notable version of this third option is Giannotti’s *Dual-Aspect Account of Powerful Qualities* (2019, 2021) (in short, DAA).23 Giannotti defines ‘aspects’ as “the ways things are” (2019: section 4) and takes them to be those (non-mereological) parts “of fundamental properties that ground and explicate dispositional roles and qualitative features, where these roles and features do not entail the existence of other properties with parts” (2021: 11). Now, there might be isolated four core features of aspects (Giannotti 2019: section 3):

1. Aspects of a property are determined by the *nature* of the property. Given that aspects are ways of being of properties, what and which aspects a property has is dependent on *how that thing is*.

2. Aspects of properties might be considered by means of *partial consideration*. Given that aspects are *ways of being* of properties, we might isolate a particular *way* a property is — the aspect being the result of abstraction, not the mental process itself.

3. Aspects of a property *supervene* on the property of which they are aspects, and thus aspects do *not* constitute any *ontological addition* to the being of the property on which they supervene. The notion of supervenience that is involved here is simply that “if the aspects of a property P supervene on P, then it is impossible that P exists, and P’s aspects do not exist”.

4. Aspects of a property are *modally fixed* — such that “in every possible world, for every property P, a change in P’s nature would determine a change in P’s aspects”.

23 Other possible formulations of the less committal form of PQV are the ‘two-sided coin’ view (Martin 1993: 184; Martin and Heil 1999), ‘qualitative dispositional essentialism’ (Tugby 2012), and possibly also Engelhard’s (2010: 41, 51) and Mørch’s (2020: 281) views.
Finally, one must clarify what the DAA advocate takes ‘dispositionality’ and ‘categoricality’ to mean — given that the traditional, robust distinction between categorical properties and dispositional properties is off the table. Accordingly, Giannotti claims that categorical aspects capture categoricality, that is, “the idea that the possession of certain actual properties contributes to how a bearer is like” (Giannotti 2019: section 4); while dispositional aspects capture dispositionality, that is, the idea “that by having a certain property a bearer possesses some powers or dispositions that are manifested in appropriate circumstances” (Giannotti 2019: section 4).

In sum, the Dual-Aspect Account of Powerful Qualities is the view that each (fundamental) property has a dispositional and a categorical aspect, where these aspects (which capture distinct ways of being of the property and play different grounding roles towards the property’s metaphysical make-up) supervene on the properties they are aspects of — such that they are nothing over and above the property at issue.

### III.4.2 Timaean elemental properties and the Powerful Qualities View

Now, let us come back to my proposed picture of the nature of properties in the Timaeus (i.e., Timaean Metaphysics of Properties) and re-consider it in light of our survey on the contemporary debate in the metaphysics of properties.

First of all, we have seen how there is a legitimate reading of Plato’s metaphysics in the Timaeus according to which the elements (which are properties, not things (cf. 49b7–c7)) have a certain dual nature (55d6–56b6, 53a9–b5), such that the intrinsic character of the elements consists of two aspects which, only if taken together, exhaust the full nature of the property. Of these two aspects, what I have called the ‘elements qua polyhedra’ captures the nomic role that the elements play in the natural world (such that, e.g., under its aspect qua pyramid, fire is such that it is enclosed by a large amount of water or air, it recombines into air (cf. 56d1–56e7)) — a contemporary metaphysician would call this, the dispositional aspect of the property. On the other hand, the ‘elements qua qualia’ aspect of the elemental properties captures how the elements are in their ‘natural condition’ (53a9–b5), and thus is responsible for the phenomenal, qualitative character of the properties (51a4–b6) — and this constitutes the categorical aspect. Finally, as our analysis in Section III.3 has shown, in the Timaeus, the ‘elements qua polyhedra’ and the ‘elements qua qualia’ are both essential, and yet distinct aspects of the elemental properties.

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24 Some have raised serious objections to Giannotti’s ‘thin’ conception of qualitativity (cf. Taylor 2019: section 4; Livanios 2020: 222–223).
such that they play different (albeit equally fundamental) roles in the metaphysical contribution of the elemental properties towards the structure of physical reality (i.e., Metaphysical contributions).

On the basis of this overall picture, I believe that Plato’s account of the elemental properties in the *Timaeus* (i.e., *Timaean Metaphysics of Properties*) may be legitimately considered as a form of the Powerful Qualities View. Indeed, it is different from Dispositionalism, as the elements have a categorical aspect essentially (i.e., ‘elements qua qualia’); and from Categoricalism, as the elements have a dispositional aspect essentially (i.e., ‘elements qua polyhedra’) — while it maintains that properties are both dispositional and categorical essentially (i.e., PQV).

After having established that the PQV offers the best theoretical framework to capture Plato’s understanding of the nature of (the elemental) properties in the *Timaeus* (i.e., *Timaean Metaphysics of Properties*), just one question is left to be addressed: which version of PQV? It cannot be the Identity theory, as, in (our proposed account of) the *Timaeus*, dispositionality (i.e., ‘elements qua polyhedra’) and categoricality (i.e., ‘elements qua qualia’) are not identical; and it also cannot be the Compound view, as it does not seem that the two aspects are taken as mereological parts of the overall elemental properties. Let us thus consider the third option — in the form of the Dual-Aspect Account of PQV.

In order to qualify as a form of DAA, a view should subscribe to a precise understanding of the notion of ‘aspects’ — that is, the four core tenets of the view that we have seen in the previous section.

The first and the fourth requirements may be addressed together. The first requirement is to conceive of aspects as dependent on the nature of the property — such that an aspect of a property is how it is, because the property is how it is. As we have seen in Sections III.1.1, III.1.2, III.2.1, III.2.2, and III.3, ‘elements qua polyhedra’ and ‘elements qua qualia’ are introduced to account for some essential features of the elemental properties — such that, e.g., only the description of fire qua pyramid (cf. 56d1–56e7) can explain the essential feature of fire such that, when it is condensed, it becomes air (cf. 49b7–c6). Accordingly, the fourth requirement states that aspects are modally fixed — such that it is not possible that, if the property changes, the aspects do not change. The same reasoning as for the first requirement applies: given that ‘elements qua polyhedra’ and ‘elements qua qualia’ capture essential features of the elements, it is not conceivable that if one element changes, its corresponding aspects do not change with it — such that, it is not conceivable that if fire is condensed and becomes air (cf. 49b7–c6), the faces of the pyramids do not break down and recombine into octahedra (i.e., air).
The second and the third requirements can be taken together as well — and they make a much more interesting point for my reading. The second requirement is that aspects of properties can be considered via partial consideration (i.e., abstraction); while the third one is that aspects supervene on properties, such that they are nothing over and above the properties of which they are aspects. In this regard, I believe *Timaean Metaphysics of Properties* respects the requirements, and that it does so thanks to the conceptual device that I employed to put together my proposed metaphysical profile of the two aspects: the *qua*-operator.

To clarify the status of *qua*-operator (and my use of it), let us consider a passage from Aristotle’s *Physics* (following Martini 2021). First, a bit of context. In the second chapter of *Physics* II, Aristotle is attempting to clarify what should be the proper object of enquiry of the student of nature, that is, whether she should focus on the study of the form of natural substances, their matter, or both. From this follows the question of ‘how the student of mathematics differs from the student of nature’ (93b22–23), as ‘natural bodies have planes, solids, lengths, and points, which are the business of the mathematician’ (193b23–25). Thus, one might think that the object of study of the physicists and the one of the mathematicians are the very same. However, there is a relevant difference — let us consider the text:

> ἡ μὲν γάρ γεωμετρία περὶ γραμμῆς φυσικῆς σκοπεῖ, ἀλλ’ οἱ ἐφ’ ἡ φυσική

Geometry studies the physical line, but not *as physical*.

(Aristotle, *Physics* II.2, 194a9–11)

The point is that geometers study lines, but not *qua* physical — thus, the difference is not in the *object*, but *the way in which* the object is studied (Martini 2021: 4). Now, the *qua*-operator (which corresponds to the ἡ in the above passage) functions as a ‘property-filter’ (cf. Lear 1982), such that it allows to filter-out all the properties that are not relevantly related to the target property (Martini 2021: 5). Therefore, the *qua*-operator does not *introduce* a new property, and it does not *add* anything to the being of the object; it just allows us to consider some of the features of the object, abstracting away (or filtering out) all the other features that are not relevant to the task. This being said, even though Martini’s (and Lear’s) conception of the *qua*-operator applies to objects (and their properties), I think one can apply the same reasoning to properties (and their aspects): the *qua*-operator allows us to filter out all the aspects of a property that are not related to the target aspect, without introducing new aspects, nor adding anything to the being of the property — thus, in our case, the *qua*-operator works as an *aspect-filter*, rather than as a *property-filter*. 
If this is reasonable, then we can see how my proposed understanding of the two aspects of the elemental properties (namely, ‘elements qua polyhedra’ and ‘elements qua qualia’) can meet the DAA’s second and third requirements. First of all, the third requirement states that aspects should be thought of as nothing over and above their properties; and we have seen how, thanks to the qua-operator, to talk about ‘elements qua polyhedra’ and ‘elements qua qualia’ does not mean adding anything to the being of the property, nor introducing new properties. It should also be noted that the characterisation of the aspects as nothing over and above the corresponding properties matches the interpretation of ‘bond’ (δεσμός) at Timaeus 31b4–c4 that I offered in Sections II.1.2 and II.1.3 — and that has then been formulated under Elements as realisers. Indeed, the notion of ‘bond’ (as the proportion), which I then associated to the structural/dispositional ‘elements qua polyhedra’ aspect of the elemental properties (cf. Sections III.2.1 and III.2.3), was characterised as nothing over and above the entities that it brings together, as nothing metaphysically extra to the elements and the relations they entertain with each other — as opposed to the ‘metaphysical glue’ interpretation of δεσμός. As for the second requirement, we have seen how we can repurpose the qua-operator to work as an ‘aspect-filter’ (rather than as a ‘property-filter’), allowing us to abstract away all the aspects of a property that are not relevant to the target aspect (thus leaving ‘elements qua polyhedra’ and ‘elements qua qualia’).

### III.4.3 Platonic (Dual-Aspect) Power-qualityism

Now, in light of the different propositions on the nature of the elements that I have attributed to Plato (at least in the Timaeus) in the present chapter, and bearing in mind the distinguishing traits of the Powerful Qualities View’s understanding of the nature of dispositionality and categoricality (and the relationship between them), I believe we can deem Timaean Metaphysics of Properties as a version of the Powerful Qualities View. More in detail, as our reading sees the elemental properties as having two essential, distinct aspects (not parts) (which are determined by the nature of the properties (i.e., i. and iv.), and, as resulting from the filtering operation of the ‘qua’ (i.e., ii.), do not add anything to the being of the property (i.e., iii.)), one of which is essentially dispositional (i.e., ‘elements qua polyhedra’), and the other one is essentially qualitative (i.e., ‘elements qua qualia’), we can define Plato’s understanding of the nature of the elements in the Timaeus (i.e., Timaean Metaphysics of Properties) as a version of the Dual-Aspect Account (of the Powerful Qualities View). Therefore, bringing all together, we can render the Timaean conception of the metaphysics of properties as follows:
**Platonic (Dual-Aspect) Power-qualityism:** elements are properties (i.e., *Elemental properties*) and have a dual nature (i.e., *Dual nature*). Under its structural (or dispositional) aspect, a property is defined on the basis of how it interacts with other properties (and thus the structural aspect of properties accounts for the nomic relations that preside over the causal functioning of the Cosmos) (i.e., *Elements qua polyhedra*) — and it is entirely accountable for *via* the quantitative language of physical science (i.e., *Mathematical quantifiability*). Under its categorical aspect, a property is eminently phenomenal (i.e., *Elements qua qualia*) and constitutes the qualitative characteristic of the world as it appears to us (i.e., *Metaphysical contributions*). Finally, the two aspects (which result from the application of the *qua*-operator) are *distinct*, but equally *fundamental* (i.e., each of the two aspects is *essential*, but neither is *sufficient*, to yield our observable world of sensibles); and they should not be seen as *mereological parts* of the property, but as supervenient on it (and thus, as *nothing over and above* the property).

In sum, I submit that conceiving of Plato’s account of the metaphysics of the elemental properties in the *Timaeus* as a form of the (Dual-Aspect Account) of the *Powerful Qualities View* (i.e., *Platonic (Dual-Aspect) Power-qualityism*) allows us to better comprehend the nature of elemental regular solids (i.e., *‘elements qua polyhedra’*), the metaphysical status of the pre-cosmic ‘traces’ (ἵχνη) of the elements in the Receptacle (i.e., *‘elements qua qualia’*), and how these two entities (conceived of as *aspects*) contribute to the constitution of the overall elements (conceived of as *properties*) and thus to the metaphysical structure of our familiar, observable world of sensibles — in connection with the two-fold objective of my research (cf. Section I).
IV. Platonic Cosmological Power-qualityism:
The View and its Virtues

In this fourth and final chapter, I shall elaborate on what I have called Platonic Cosmological Monism (PCM) and Platonic Power-qualityism (PPQ), and formulate the overall (metaphysical) view that I attribute to Plato in the Timaeus — which I shall call Platonic Cosmological Power-qualityism (PCP). Then, after having demonstrated that such a view is a legitimate reading of the Timaean metaphysics, I shall present some reasons why the view constitutes (not only a plausible but also) an appealing reading of the Timaean metaphysical outlook.

IV.1 The View

In Chapter II, I have investigated the Timaean metaphysics under its mereological aspect, and I have held that one can legitimately read Plato’s proposed picture of physical reality in the Timaeus such that all entities a-symmetrically depend on the Cosmos (which is the only basic entity), conceived of as the ultimate (structured) whole (i.e., the ultimate categorical structure) which all entities are parts of, such that there is a downward metaphysical necessitation from wholes to their parts (all the way down) — a view which I called Platonic Cosmological Monism (PCM). Then, in Chapter III, I have studied the Timaean metaphysics of properties, and concluded that one legitimate reading of the Timaeus is what I call Platonic Power-qualityism (PPQ), according to which elemental properties having a dual nature, such that, under their structural aspect they are individuated by their nomic role, while under their categorical aspect, they are essentially phenomenal and qualitative in kind — where both aspects play different but equally essential roles towards the constitution of the overall property. Now, from joint consideration of these two crucial aspects of the Timaean metaphysics, I believe we can attribute to Plato (at least as far as the Timaeus is concerned) the following view:
**Platonic Cosmological Power-qualityism:** as for what is there in the physical reality, we can say that there is the Cosmos, which is the only basic entity, and that this Cosmos is an essentially structured entity (i.e., a categorical structure), such that it has parts (which, in turn, are also categorical structures) all the way down — where these parts correspond to the physical entities we interact with in our everyday experience. As for how physical entities are (that is, the nature of the properties that they bear), the Cosmos (as entirely constituted by the elements) should be seen as having a dual nature. Under its structural/dispositional aspect, it consists of a net of nomic relations — which determine the (causal) behaviour of entities in nature. Under its categorical aspect, it is non-quantitative and phenomenal in kind — which constitutes the qualitative character of our familiar experience of the world (i.e., phenomenal qualia). Finally, the two aspects (which result from the application of the qua-operator) are distinct, but equally fundamental (i.e., each of the two aspects is essential, but neither is sufficient, to yield our observable world of sensibles); and they should not be seen as mereological parts of the property, but as supervenient on it (and thus, as nothing over and above the property).

Before moving on to the discussion of the virtues of the view, one central specification concerning Platonic Cosmological Power-qualityism must be conducted.

As is manifest, PCP has two rather distinct legs: it is an account of the mereological structure of physical reality and a theory of the metaphysics of properties. However, the two are not separate views — rather, they constitute a well-integrated metaphysical outlook. As we have seen in Sections III.1.3 and III.2.3, my proposed understanding of the metaphysics of properties in the Timaeus, as involving a structural aspect that determines the nomic profile of the physical entities, not only matches, but completes and sustains my reading of the Timaean Cosmos as a structured whole of parts (i.e., a categorical structure) that has been defended in Chapter II (i.e., Timaean mereology). On the other hand, as shown in Section III.2.2, my treatment of the dual nature of properties and, in particular, of the categorical aspect of the elemental properties, motivates on and complements the understanding of the notion of ‘categorical structures’ and, in general, of the relation of composition in the Timaeus that I proposed in Sections II.1.2 and II.1.3 — which I called Elements as realisers. This is all to say that, even though two, distinct legs of the view may be isolated, they both constitute integral parts of what is a single, all-encompassing picture of the Timaean metaphysical account of physical reality.
IV.2 The Virtues

Once having finally outlined and defended the legitimacy of my preferred reading of the Timaean metaphysics, I shall now present two virtues that, I believe, follow from adopting *Platonic Cosmological Power-qualityism* as a lens through which reading the dialogue. Both sections take up some interpretative as well as conceptual challenges that the *Timaeus* presents, and both are essentially aimed at showing how my proposed reading of the dialogue has the theoretical as well as exegetical resources to solve some traditional points of contention concerning Plato’s account of our metaphysical story of (physical) reality.

IV.2.1 PCM and the Zenonian concern for *Infinite Divisibility*

A first virtue of reading Plato’s picture of the Timaean cosmology as an instance of *Platonic Cosmological Power-qualityism* has to do with the theory’s approach to the notion of composition (and is thus more relevant to the mereological leg of the view) and consists in the view’s capability to provide a satisfying answer to the Zenonian concern about extension and divisibility — without (having to) appeal to the Forms.\(^{25}\)

A bit of context might be helpful. The mid-fifth century’s ontological and cosmological speculation was dominated by the works of those who endeavoured to overcome the Parmenidean challenge, namely Empedocles, Anaxagoras, and Leucippus. However, not all post-Parmenidean thinkers were pluralists. Indeed, two philosophers, namely, Zeno of Elea and Melissus of Samos, not only seem to have accepted Parmenides’ philosophy, but they even attempted to further the Eleatic project and highlight that its consequences were, in fact, even more radical than they already appeared (cf. Wardy 1988: 128). Specifically, Zeno, we are told by Plato, was chiefly concerned with the nature of the sensible world — and, in particular, Plato specifies that he was engaged in the project of demonstrating that “even more absurd” (Plato, *Parmenides*, 128d) consequences follow from the Pluralists’ thesis that there are Many.

Now, Zeno’s main argument against the existence of the Many, also known as *Argument A* (cf. Furley 1967: 63), is found in fragments 29B1, 29B2, 29B3, and a portion of text from Simplicius which is not included in DK (i.e., Simplicius, *Physics*, 139. 18–19). The argument may be summarised as follows:

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\(^{25}\) I do not intend to claim that Plato *would not* appeal to the immaterial realm of Forms to dodge the Zenonian argument for infinite divisibility; I just wish to point out that the Timaean structure of physical reality is already metaphysically equipped to accommodate the possibility of infinite descent.
[If Many exist:]

a) Each of the Many has no magnitude (= Simplicius, *Physics*, 139. 18–19)

b) And therefore (i.e., if a thing has no magnitude), they will not exist. (= 29B2)

c) Thus, as the assumption is that they do exist, they will have magnitude (= 29B2 + 29B1); and this yields the conclusion that their magnitude is unlimited (= 29B1/29B3).

Therefore,

d) If we accept that Many exist, it results that they must be both so small that they have no magnitude (= a) and so great as to be unlimited (= c). (= 29B1)

Let us now consider the premises one by one. The principal evidence for premise a) is Simplicius, *Physics*, 139. 18–19: ‘each of the Many has no magnitude, since each is the same as itself and one’ (cf. also Philoponus, *Physics*, 80. 25; Simplicius, *Physics*, 99. 12; and Simplicius, *Physics*, 138. 4). Now, the reasoning behind the premise runs as follows. If Many exist, then everything that is extended (i.e., the universe) ultimately consists of individual particles (i.e., the Many), and these particles must be indivisible units. In fact, each of the Many cannot have themselves parts, as this would be incompatible with their character of being single things and unities — see *Existence Monism* (cf. Section II.3.2). That is to say that, if they had parts, each of the Many would not be the ‘same as itself and one’ anymore — where the principle at stake here is *self-identity* (cf. 28B8.57b; cf. Vlastos 1957; Palmer 2009: 198). As Curd points out (2004: 176), this move is explained by Simplicius (*Physics*, 139. 19) in his reference to Themistius (*Physics*, 12. 2), according to whom Zeno’s argument establishes that what-is is a unity because it is indivisible and continuous, for division entails plurality — and thus that the Many must be indivisible units. It follows, then, that the only way in which the units to which we ultimately come down from the division (i.e., the Many) may be indivisible units, is if these units have no magnitude (= a). Then, the second premise moves from the results achieved by the first one and claims that b) if the ultimate units (i.e., the Many) have no magnitude, they do not even exist — as *per* Zeno’s adherence to the Eleatic canon (cf. Vlastos 1957: 2) (= 29B2). The third and last premise follows from the previous one and claims that, as we moved from the assumption that Many do exist, then they must have magnitude — that is, they are indeed extended (= 29B2 + 29B1). Further, considering that “if a thing is a part of some whole, it must

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26 A word of clarification. As Fränkel notes (1942, n. 40, 41), the point here seems to be that once the principle of divisibility is admitted (even though just once), then nothing will be immune to it and, thus, there will be nothing in the world which could be said *strictly speaking* to be a unit. Thus, to push back against this, Zeno claims that the principle of divisibility and plurality demands the for the Many to consist of indivisible units (cf. *Physics*, 139. 19).
be of the same nature as the whole” (Furley 1967, 65) (cf. ‘each is the same as itself and one’, Simplicius, Physics, 139. 18–19), if the whole is extended and divisible, then the parts of the whole must be extended and divisible. Therefore, the units resultant from the division of the original unit (i.e., the Many) each have infinitely divisible nature (that is, limitlessly many parts) and infinite magnitude (as each part, to exist, must be extended, as per 29B2). Then, given that the magnitude of each thing is equal to the magnitude of all its parts taken together, and that the magnitude of limitlessly many parts taken together (each having some magnitude) is unlimited, then it follows that c) the magnitude of each of the Many is unlimited (= 29B3; cf. Palmer 2009: 197; 2021; cf. also Hasper 2006 for an alternative reading). From the premises, follows the conclusion that the units resultant from the division of the original unit would have at the same time no magnitude (= a), and infinite magnitude (= c) — which is a patent contradiction (= 29B1). However, what is interesting to notice for my research is that the argument establishes that, if a thing exists, it must have magnitude (= b), but if one thing has magnitude, then it is divisible (= c), for the only way for a thing to not be divisible is to have no magnitude (= a) — which is summarised in 29B1 with the opening phrase.

Now, some scholars (cf., e.g., Vlastos 1957: 6–9; Curd 2004: 177) have suggested that Zeno’s argument may lead to some conclusions that go beyond the original purpose for which it was primarily designed, that is, rejecting the possibility of the existence of the Many. Specifically, as Furley states in a footnote, Zeno’s argument main achievement may be that it has proved “infinite divisibility” (1967: 101) — that is, the view that everything is infinitely divisible, generally known as Infinite descent (cf. Schaffer 2003, 2010a; Tahko 2014; cf. also Lewis 1991: 20; Sider 1993: 287). If we accept that Zeno’s argument proved that extension and indivisibility are incompatible properties (Vlastos 1961: 29; Furley 1967: 67; Coxon 2009: 339), then all the Pluralist ontologies are in danger (as they posit a fundamental (micro-)level of reality where there reside some extended entities). However, the Eleatic doctrine too must be rejected on the basis of Argument A, at least in so far as the One is thought of as extended — bearing in mind that Zeno claims that if one thing is not extended, then it does not even exist (=29B2). As is clear, the main reason why Zeno’s argument is so concerning is that, if there is no end to the world’s complexity (i.e., infinite descent), then it is not clear how one can defend the thesis that the Being (i.e., what exists) is grounded (cf. Cameron 2008) — that is, that there is a compositional base of simple elements.27

27 The Pluralists’ counter-argument may be to deny the possibility (physical, theoretical, or both (Furley 1967: 94)) of infinite divisibility — but, as Aristotle has shown, that is not really an effective strategy (De Gen., A 2, 317a1–9). On the other hand, the Eleatics might deny that what-is is extended (cf., e.g., Vlastos 1957, Mourelatos 2008, Coxon
To the main question now: does Zeno’s argument affect Plato as well? In a way, yes — even more so, Plato seems to own infinite descent in the *Timaeus*. Indeed, if we take Conford’s reading of the construction of the elements, the Timaean structure of reality seems specifically designed to accommodate the metaphysical possibility of there being no end to the world’s complexity (cf. *Ubiquitous structure*). As we have seen in Section II.2.3.1, Conford finds the most salient feature of the elementary triangles in their being (in principle) internally self-replicable *ad infinitum* — from which it follows that the metaphysical system outlined by Timaeus (with regards to the construction of the elemental solids) allows for structures all the way down. In this direction, Morrow remarks that, given that the elementary triangles can be replicated internally *ad infinitum*, we should be careful in treating the elementary triangles as mereological atoms (1968: 23). This being said, Plato is quite explicit in saying that the elementary triangles represent the bottom-most level of analysis of the composition of the Cosmos. However, he makes it just as much clear that further principles may be known to ‘god or those god-loved among men’ (53d6–7). From this final remark, one might get the idea that, even though the elementary triangles layer represents the bottom level of analysis in the context of Timaeus’ narration (‘in the actual world’, one might even say), in principle, it must not necessarily be this way — for further (possibly, infinite) levels (of division) may be accessible to others. If this is the case, it seems that Plato leaves open the metaphysical possibility for infinite descent, that is, precisely the view that there is no end to the world’s complexity — a thesis which I called *Downward composition* (cf. II.2.2).

Now, as we have seen, the possibility of infinite descent represents a serious problem for most of the Presocratic ontologies. A number of scholars pointed out that the problem may be dodged by positing a fundamental *immaterial* level of reality (cf. Guthrie 1962: 120; Reale 1970: 197), which would do the grounding work — in Plato’s case, this would clearly be the Forms. However, I do not think that appealing to the Forms is necessary for Plato, at least as far as the *Timaeus* is concerned. As already said, the force of the Zenonian argument lies in the idea that if there is no ontological bottom level of reality (i.e., no mereological atoms), then there is no ground for the being. Yet, these two claims need not be inseparable — meaning that the implication is not necessary. That is to say that one way to avoid the concern that follows from Zeno’s *Argument A* would be to embrace infinite descent, while still providing a compositional

ground for what exists. Indeed, some contemporary solutions to the problem seem to point precisely in this direction: David Armstrong, for example, suggests that one can build a metaphysical system that can allow for possible worlds where the fundamental constituent has no mereological atoms as parts, that is, worlds where there are no simples, but rather structures of structures *ad infinitum* (cf. 1978: 67–68). Now, if we accept *Platonic Cosmological Monism* as a legitimate interpretation of the Timaean (mereological) structure of physical reality, then Plato might be seen as capable of doing exactly the latter move. Indeed, PCM’s metaphysical apparatus is at home with the possibility of infinite complexity, as the mereological ground of reality is not to be found at the ‘lowest’ level of ontology, rather at the top — and the Cosmos is not a simple, but an essentially complex, structured whole. As we have seen, if we read *Timaean mereology* as an instance of Priority monism, then we can see how Plato can hold both that there are no mereological atoms (that is, that infinite descent is possible) and that all existing entities asymmetrically depend on the basic entity (i.e., the Cosmos), which thus provides ground to the whole edifice of physical reality. In a such conceived picture, there is no need to appeal to the Forms to avoid the problematic implications of Zeno’s argument (i.e., infinite descent), as the argument is not problematic in the first place: the structure of physical reality may well accommodate the metaphysical possibility of infinite complexity while still being grounded (by being asymmetrically dependent on the Cosmos as the ultimate whole).

**IV.2.2 PPQ and the ‘Recognition problem’ of perception in the *T*īmāeus**

The second virtue of my proposed reading of the Timaean picture of physical reality has to do with Plato’s understanding of the human interaction with the elements — and is thus more relevant to the leg of PCP which is concerned with the metaphysics of properties (i.e., PPQ). More in detail, in this section, I shall consider one of the most emblematic passages of the dialogue where the metaphysics of properties is addressed in tandem with the process of human perception (i.e., 61d5–62d6), and show how my account has the resources to solve one problem (i.e., the Recognition problem) which arises when one attempts to explain the proper functioning of *aisthēsis*.

Before approaching the reading of the text, we ought to briefly outline the mechanism of *aisthēsis*, as it is presented in the dialogue. In extreme synthesis, Plato’s account of the process of perception runs as follows (cf. Brisson 1997: 151–2; 162–3). The corpuscles of an object (which are particles of elements) clash (cf. 64a6–c7) with the elemental masses (cf. 56c2–3) that constitute the sensitive tissues of our living body, which is thus being affected (cf. 63c3, 65b6) by
the (particles) of the object that affect it (cf. 62b6, 64e5, 65b5, 65b7, 65d6), and this movement (cf. Timaeus 43b5–c5, 64e6; Philebus 34a3–6; Theaetetus 186b11–c2) is then transmitted to the soul. The clash of the corpuscles thus triggers a process of transformation, that is, a process of re-configuration of the basic triangles (of the elemental particles) into different (elemental) structures.  

Let us now consider 61d5–62b6, where a complete account of the affective qualities ‘hot’ (θερμόν) and ‘cold’ (ψυχρόν) is offered:

First, then, let us see what we mean when we call fire hot [θερμόν]. Let’s look at it in this way: We notice how fire acts on our bodies by dividing and cutting them. We are all well aware that the experience is a sharp one. The fineness of fire’s edges, the sharpness of its angles, the minuteness of its parts and the swiftness of its motion—all of which make fire severely piercing so that it makes sharp cuts in whatever it encounters—must be taken into consideration as we recall how its shape came to be. It is this substance, more than any other, that divides our bodies throughout and cuts them up into small pieces, thereby giving us the property (as well as the name [κερματίζειν]) that we now naturally call hot [θερμόν]. What the opposite property is, is quite obvious; we should not, however, keep anything left out of our account. As the larger parts of the moisture surrounding our bodies penetrate our bodies and push out the smaller parts, but are unable to take up the places vacated by those smaller parts, they compress the moisture within us and congeal it by rendering it in a state of motionlessness in place of a state of moving non-uniformity, by virtue of the uniformity and compression so introduced. But anything which is being unnaturally compressed has a natural tendency to resist such compression, and pushes itself outward, in the opposite direction. This resistance, this shaking is called “trembling” [τρόμος] and “shivering” [ῥῖγος], and the experience as a whole, as well as what brings it about, has come to have the name cold [ψυχρόν].

(61d5–62b6)

The passage may be divided into two parts. First, at 61d5–62a5, we read that the nature of the property ‘hot’ is determined by the structure and geometrical characteristics of the regular body of which fire is an instantiation—such that we perceive ‘fire’ as ‘hot’ owing to the peculiar features of its pyramidal shape. Then, at 62a5–b6, we read that the interaction between the icosahedron (i.e., water) and the human body causes the particles of the body to be compressed. These particles, however, cannot withstand the unnatural inward compression that is introduced by the icosahedra of water and thus push back in outward direction, trying to counter the pressure. The tension between the inward compression of the solids of water and the consequential outward resistance of the particles of the body consists of what is called ‘trembling’ (τρόμος) and ‘shivering’ (ῥῖγος). Finally, Timaeus concludes that ‘this affection as a whole’ (τὸ πάθος ἅπαν τοῦ τοῦτο) is called ‘cold’ (ψυχρόν) (62b6).

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28 I should point out that the theme of perception in the Timaeus is a notoriously controversial topic, and thousands of pages have been written over the years attempting to provide a consistent account for it—see, e.g., Burnyeat (1976), Brisson (1997), Ierodiakonou (2005), and Lautner (2005). Thus, I shall refrain from providing a systematic treatment of aisthēsis, and instead focus on the Recognition problem.
This being said, the above passage is generally held to present a difficulty, which I believe is best expressed in the form raised by Karfik (2020: 224–225) — and which I shall call the Recognition problem (of perception). The issue is the following: how is it that we can identify and name the perceptible sensations that appear to us? That is to say, how is it that when we feel something (e.g., cold), we recognise that sensation as that particular sensation (i.e., of cold)? Let us take a step back and reconsider the process of aisthēsis. When a particle of water clashes with the elemental masses of the sensitive tissues of our living body it triggers the reconfiguration of the structure of the corpuscles, thus causing ‘shivering’, ‘trembling’ etc.. The latter is a process which admits for a purely and solely mathematical description (cf. Elements qua polyhedra and Mathematical quantifiability) — and, as such, the grasp of this process is a cognitive act, just as the mathematical pattern of the process is an intelligible object (cf. Karfik 2020: 223–224). However, this is not the whole story — otherwise, we would not have a Recognition problem. Indeed, when a particle of water comes into contact with our sensitive tissues, we feel cold (that is, a perceptible quale). Such (indeed, mysterious) discrepancy between the first description of the process (namely, the mathematical pattern) and the second one (namely, the felt perception) is deemed by Karfik to be due to “something in the nature of the process that escapes the grasp of such a cognitive act” (2020: 224) — where “it is not easy to say what this something is” (2020: 224). In this direction, Karfik proposes two main options to solve the problem (2020: 224–225):

i. We grasp the mathematical function of every perceptible sensation that occurs to us, that is, we make the calculus of all the processes (of reconfiguration of the polyhedric structure of the elemental particles) that are affecting our body and assign to different formulas thus uncovered the corresponding names.

ii. There exist Forms of perceptible sensations (i.e., qualia), through which the rational soul can recognise what is affecting it and assign to the sensation the correct name.

Now, I do not believe that option i. is a viable one — and Karfik seems to agree on this (cf. 2020: 225).29 Indeed, option i. would require the human souls to have the computational capacity to handle a gigantic number of calculations all at the same time (considering the range of different perceptible sensations that occur at the same time) — an analytical power that far

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29 Karfik also has a third option, which elaborates on a comparison with the Parmenides and claims that the recognition is carried out through ‘convention’ (cf. 2020: 225). Yet, this (admittedly rather unclear) possibility is swiftly dismissed by the author, as it does not grant the possibility to form true opinion concerning aisthēsis, which is in open contradiction with what Timaeus says at 37b7 and at 43b5–44b1.
surpasses the capacity of human beings (and is open only to the Demiurge, cf. 68d2–7). Then, we have option ii. — which, even though legitimate, seems quite metaphysically costly (and perhaps even far-fetched), as Karfik himself seems to concede (cf. 2020: 225). Indeed, apart from having to postulate Forms for every perceptible sensation (including colours, pleasures and pains and tactile sensations), with option ii., one would also need to invoke the mechanism of anamnesis (i.e., recollection) to do away with the Recognition problem. Karfik’s reasoning for option ii. (which is openly reminiscent of Brisson 1997: 159–160) would run roughly as follows. As we know, the impact of the external elemental particles affects the sensitive tissues first, and then the movement is transmitted to the soul. More in detail, when the movement is transferred to the Circle of the Different, this ‘touches’ the Circle of the Same, thus activating the recollection of the Form of the corresponding perceptible quale — and enabling the recognition. In sum, if we accept option ii., an entirely new set of Forms, the mechanism of recollection, and a complex arrangement of the Circles of the soul ought to be put in place to explain how human beings know what they are feeling.

This being said, I think my proposed reading of the nature of the elemental properties might offer a solution to the Recognition problem which is more metaphysically parsimonious (for it does not require us to posit new Forms or to invoke anamnesis) and also sits very well in the overall context of the dialogue. Indeed, it should be clear how the Recognition problem stems from the underlying idea that elements are just or relevantly polyhedra — that is, precisely the view that we considered in Section III.3 and that I called Structuralism about the elements. However, if we grant that a certain qualitative aspect is built-in into the metaphysical constitution of the elemental properties, we should be able to avoid the difficulty — including not having to postulate Forms or appeal to recollection to explain how humans recognise the sensation of, say, cold, as the sensation of cold. Again, as Karfik suggests (2020: 224), the problem is due to an apparent discrepancy between what happens (that is, the reconfiguration of the elemental solids) and what appears to us (that is, a phenomenal quale), such that there is ‘something’ that seems to escape the former (mathematical) description. Now, under my proposed account (i.e., PPQ), this ‘something’ is accounted for: it is the inherently qualitative aspect that is built-in in the metaphysical profile of the elemental properties (i.e., Elements qua qualia) — and that is not reducible to the structural, quantitative aspect of the elements considered qua regular solids. Therefore, if we posit a qualitative aspect to the elemental properties, we do not have any sort of recognition problem: when a particle of water clashes into our living body, we thereby feel cold, and this allows us to recognise all the complex of the phenomena that are occurring (e.g., ‘shivering’, ‘trembling’ etc.) as (the behavioural, nomic) part of the overall sensation of cold (cf.
the recognition is thus granted by the qualitative aspect that is built-in into the metaphysics of the property.\(^{30}\) As is clear, this is all perfectly in line with what I have previously called *Metaphysical contributions*: the qualitative aspect of elements grounds our everyday perception of the natural world, while the structural aspect of the properties grounds the nomic functioning of physical reality — where these are equally fundamental, yet utterly distinct, *aspects* of the elemental properties. Finally, it should also be noted that, as mentioned in section III.3, it is hard to see how the interpretation according to which all the affective qualities of the elements are reducible to their being polyhedra (i.e., *Structuralism about the elements*) can explain Timaeus’ claim at 30a2–6 that the Demiurge ‘took over all that was visible’ (πᾶν ὅσον ἴν ὄρασιν παραλαβὼν) — which suggests that what I call the *Elements qua polyhedra* aspect is not strictly necessary for an element to be perceptible. As is clear, 30a2–6 is not problematic for my own reading — thanks to *Elements qua qualia*.

Let us now come back to 61d5–62b6 and see whether my preferred interpretation is compatible with the text. As we have seen, what the structural element of water is responsible for is the ‘trembling’ and the ‘shivering’, that is, the behavioural, nomic effects of the property ‘cold’ — such that the structural aspect of water (i.e., the water *qua icosahedron*) is responsible for activating the causal capacities of the property (i.e., the fact that the property ‘cold’ disposes its bearer to shiver and tremble). Note that, from this, it does not follow that the nature of the property ‘cold’ is *entirely* and *only* determined by the characteristics of the icosahedron. In fact, Plato adds a further claim, that is, that ‘this affection as a whole’ is ‘cold’ — not just the ‘trembling’ and the ‘shivering’. Thus, what is left out from the picture of the ‘trembling’ and the ‘shivering’ is, I believe, the proper *qualitative* feeling of cold, which, together with the ‘trembling’ and the ‘shivering’, makes up the ‘affection as a whole’. This leads to the conclusion that the structural aspect of ‘cold’ (i.e., water *qua icosahedron*) is responsible for the behavioural effects of the property (i.e., the ‘trembling’ and the ‘shivering’), but not for the ‘affection as a whole’, which also includes the *feeling*. Now, under *Platonic Power-qualityism*, this *feeling* is accounted for by the qualitative aspect of the property, that is, *Elements qua qualia* — which, as

\(^{30}\) Note that it may well be the case that my proposed account is compatible with there being Forms of perceptible *qualia*, in so far as we grasp such Forms not through our interaction with the elements *qua polyhedra* but *via* the purely qualitative aspect of the elemental properties. One might even speculate that, as the polyhedra are images of the Forms of the regular solids, the fleeting ‘traces’ (ἲχνη) of the elements in the Receptacle (which, under my proposed account, constitute the qualitative aspect of the elements in their cosmic condition) are images of the Forms of the perceptible *qualia* — which would a) explain why the only descriptions that Plato offers for the elements in the Receptacle (i.e., in the pre-cosmic condition) are eminently *qualitative* (cf. Section II.1.5.2), and also b) be consistent with the view (quite popular in scholarship) that the ἲχνη of the elements in the Receptacle are actually images of *(some)* Forms (cf., e.g., Van Riel 2020: 173–174).
argued in Section III.2.2, is presented by Plato by means of an explicitly phenomenological terminology (i.e., ‘fiery hot’ (πεπυρωμένον) and ‘dampened’ (ὑγρανθέν)). Therefore, I believe that the text leaves open the possibility for my reading.

One final note. As is clear, in order to do away with the Recognition problem, my account requires us to conceive of the perceptible qualia as metophysically independent from the perceiving subject, that is, to think of qualia as intrinsic properties of entities (cf. Dual nature) — a thesis which (as one might expect) Karfik is rather resistant to (2020: 226). However, if my proposed interpretation in Chapter III is correct, there is indeed some legitimacy to thinking of the elements as having a certain metaphysically built-in qualitative aspect. Something similar to this idea seems to be defended by Cornford in his treatment of 61d5–62b6 (1937: 258–262) (which draws on Taylor (1928)). The scholar holds that, in the passage, Plato is actually elaborating on (and improving) Democritus’ account of sensations. The main thought here is that, while Democritus denied an independent status to qualities (conceived of in the phenomenological sense of ‘felt affections’), Plato “did not deprive them of their independent reality” (1937: 261). However, the fire particles’ (i.e., the regular solids) characteristics of having fine points and sharp edges “cannot constitute [the fire’s] ‘hotness’”, and indeed “it is hard to see how the hotness can have an ‘independent reality’” (1937: 261) — and yet, in Plato, it does. Thus, Cornford suggests that this might be explained by the fact that Plato’s particles, in contrast to Democritus’ atoms, are not solid lumps, but “contain ‘motions (changes) and powers’”, such that “these may be called independently existing qualities, which can cause in our souls sensations such as feeling hot” (1937: 262). Now, with ‘motions and powers’ Cornford refers to some phenomenal qualities of the elements in the Receptacle (cf. 1937: 180–181, 190–191, 199, 205–206, 229), much in tandem with my understanding of Elements qua qualia.
V. Concluding Remarks

In my dissertation, I have presented and defended an account of the metaphysical outlook of Plato’s *Timaeus*, both under its mereological aspect and in relation to the metaphysics of properties. This has been achieved through some sort of a hybrid methodology. Indeed, to conduct my analyses and prove my points, I have resorted to a close reading of the Timaean text, but also to an open-minded confrontation with some of the views and questions that animate the contemporary debate in metaphysics — such as, e.g., Priority monism, Dispositionalism, and the Powerful Qualities View. Such a hybrid approach (though grounded in a careful treatment of the original texts) has led me to attribute to Plato (at least in the *Timaeus*) a unified account which I have ultimately named *Platonic Cosmological Power-qualityism* — which has emerged not only as a legitimate reading of the Timaean text, but also as an appealing interpretation of the late Platonic metaphysics.

This being said, the job is not done yet: several questions and challenges (both of interpretative and conceptual nature) lie ahead, unaddressed.

If *Platonic Cosmological Power-qualityism* accounts for the Timaean picture of physical reality as self-standing and metaphysically self-sufficient, what is the role of the Forms? Indeed, the Forms may be seen as shadowing throughout my entire treatment of the dialogue: they certainly are metaphysically relevant, but how to account for them?

What are the role and the proper place of mentality in the picture traced by *Platonic Cosmological Power-qualityism*? We have seen that, according to PCP, in their categorical, natural condition, the elemental properties are to be seen as *phenomenal* in kind — such that, ‘when’ they were in the Receptacle, the elements were essentially constituted by un-structured qualities. And yet, doesn’t the presence of phenomenal qualities presuppose the presence of a subject (which would experience said phenomenal qualities)? Can phenomenal qualities truly exist *un-perceived* and still qualify as *phenomenal*?

Is the Timaean outlook an isolated *unicum* in the Platonic ‘system’, and, more broadly, in the ancient tradition? Or perhaps traces of *Timaeus*’ metaphysical apparatus can be found in other dialogues (e.g., the role of vowels at *Sophist* 253a and the ontology of mixtures in the *Philebus*), and rudimentary fragments of the notions that are put to work in the *Timaeus* are reminiscent of other traditions (e.g., *harmonia* as geometrical proportion in Philolaus)?

These are only three of a whole set of pressing questions that the advocate of *Platonic Cosmological Power-qualityism* has to address to sustain her view — in sum: *reliquia desiderantur.*
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VII. Appendix

VII.1 Texts

Plato's Timaeus

Timaeus 31b4–32c4\textsuperscript{31}

...πορευόμενοι ταύτην γωνίας μεσότης ἑπτανόμενον, ὡς ἄν συνάχθηκε τις τριγώνοι των πλευρῶν, τὸ μὲν ὁριόμενον τριγώνων κατὶ τὸ ψυχημένην ἑκάτερον καθαροῦ ἀναγάμενον, τὸ δὲ ἐν εὐθείᾳ ἐν τῇ καθαρῷ 

Timaeus 53c4–d4

priótōn mēn dē pēr kai ἑπὶ kai ὃδωρ kai ἄρῃ tē δωματα ἑστη, δήλου ποι και παντι: tō dē tō σωματος εἶδος pān kai βάθος ἔχη, tō de βάθος aú pāsta aνάγκη tīn ἐπίπεδου περιεληφθέναι φύσιν: ἢ de ἐρθῇ tīs ἐπιπέδου βάσεως ἐκ τριγώνων συνέστηκεν, tā de τρίγωνα πάντα ἐκ δυον ἀρχεται τριγώνων, μίαν μὲν ὅρθην ἐγχοντος ἐκατέρου γωνίαν, τās de ὁδειας: ἢν το μὲν ἐτερον ἐκατέρωθεν ἔχει μέρος γωνίας ὅρθης πλευρας ἵσιας δημιουμένης, τὸ δὲ ἐτερον ἀνίσος ἄνισα μέρη νεμειμένης.

Timaeus 53d4–d7

taυτην δη πυρος ἀρχην και των ἄλλων σωματων ὑποτιθεμέθα κατα τον μετ' ἀνάγκης εἰκότα λόγον πορευόμενοι: τας δὲ ἐτούτων ἀρχών ἀνωθεν θεος οὐδὲν και ἄνδρων ὡς ἂν ἐκεῖνως φιλος ἦν.

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\textsuperscript{31} As already specified, for the original text of the Timaeus, I follow Burnet's edition (1902), while translations are from Zeyl (2000) — with occasional modifications.
οἶνον δὲ ἐκαστὸν αὐτῶν γέγονεν ἐίδος καὶ εξ ὅσων συμπεσόντων ἀρίθμων, λέγειν ἂν ἐπόμενον εἴπ. ἀρξεῖ δὴ τὸ τε πρῶτον ἐίδος καὶ σμικρότατον συνιστάμενον, στοιχεῖον δ’ αὐτὸ τὸ τὴν ὑποτείνουσαν τῆς ἑλάστους πλευρᾶς διπλασίαν ἔχον μήκες: σύνεκα δὲ τοιούτων κατὰ διάμετρον συνιστάμενον καὶ τρις τούτον γενομένου, τὰς διαμέτρους καὶ τὰς βραχείας πλευράς εἰς ταῦτα ως κέντρον ἐρεισάντων, ἐν ισόπλευρον τρίγωνον εξ εξ τὸν ἀρίθμον ὄντων γέγονεν. τρίγωνα δὲ ισόπλευρα συνιστάμενα τέτταρα κατὰ σύντρεπαι ἐπίπεδους γωνίας μίαν στερεᾶς γωνίαν ποιεῖ, τῆς ἀμβλυτάτης τῶν ἐπιπέδουν γωνιῶν ἐφεξῆς γεγονούσιν: τοιούτων δὲ ἀποτελεθεισῶν τετράμων πρῶτον ἐίδος στερεῶν, ὅλου περιφερούς διανεμητικὸς εἰς ἴσα μέρη καὶ ὅμιοι, συνίσταται. δεύτερον δὲ ἐκ μὲν τῶν αὐτῶν τριγώνων, κατὰ δὲ ισόπλευρα τρίγωνα ὅκτω συστάντων, μίαν ἀπεργασιμένην στερεᾶς γωνίαν ἐκ τετράμων ἐπίπεδων: καὶ γενομένων εξ τοιούτων τὸ δεύτερον αὐτὸ ὑπόμενον ἔσχεν τέλος. τὸ δὲ τρίτον ἐκ διὰ εὖ ἐξήκοντα τῶν στοιχείων συμπεριεχόμενων, στερεῶν δὲ γωνίων δώδεκα, ὑπὸ πέντε ἐπιπέδουν τριγώνων ἱσοπλεύρων περιεχομένης ἐκάστης, εἰκοσι βάσεις ἔχουσιν ἱσοπλεύρους τριγώνων γέγονεν. καὶ τὸ μὲν ἔτερον αὐτῷ λατρευτικοὶ τῶν στοιχείων ταῦτα γενόμενα, τὸ δὲ ἑσοπεδέας τριγώνων ἐγέννη τὸν τε τετράτος φύσιν, κατὰ τέτταρα συνιστάμενον, εἰς τὸ κέντρον τὰς ὀρθάς γωνίας συνάγον, ἐν ισόπλευρον τετράγωνον ἀπεργασίαν: εξ δὲ τοιαύτα συμπεριεχόμενα γωνίας ὅκτω στερεῶς ἐπετέλεσαν, κατὰ τρεῖς ἐπιπέδους ὀρθάς συναρμοσθεῖσις ἐκάστης: τὸ δὲ σχήμα τοῦ συστάντος σώματος γέγονεν κυβικῶν, εξ ἐπιπέδους τετραγώνως ἱσοπλεύρους βάσεις ἔχουσιν. ἔτι δὲ οὕσις συστάσεως μίας πέμπτης, εἰπὶ τὸ πάν ὁ θεὸς αὐτῆ κατεχρήσατο ἐκείνω διαζωγραφῶν.

Timaeus 55d6–55b6

cαὶ τοῦτον μὲν μεθετέον, τὰ δὲ γεγονότα νῦν τῷ λόγῳ γένη διανείμωμεν εἰς πέρ καὶ γῆν καὶ ἐδωρ καὶ ἀέρα. γῆ μὲν δὴ τὸ κυβικὸν εἴδος δόμην: [55e] ἀκινητότατή γὰρ τῶν τεττάρων γενόν σὲ καὶ τῶν σωμάτων πλαστικωτάτῃ, μᾶλλον δὲ ἀνάγκη γεγονέναι τοιούτοι τὰ τὰς βάσεις ἀσφαλεστάτας ἔχουν: βάσεις δὲ ἐν τοῖς κατ’ ἀρχής τριγώνων ὑποστηθέντων ἀσφαλεστέρα κατὰ φύσιν ἢ τῶν ἵσων πλευρῶν τῆς τῶν ἁνίσων, τὸ τε ἐξ ἑκατέρου συνυπέρεσθεν ἐπίπεδον ἱσοπλεύρον ἱσοπλεύρου τετράγωνον κατὰ τὰ μέρη καὶ καθ’ ὅλον στασιμοτέρον, ἐξ ἀνάγκης συνεντός τῶν αὐτῶν μερῶν· τὸ δὲ δεύτερον δευτέρως τὰ αὐτὰ ταῦτ’ ἔχειν, τρίτως δὲ τὸ τρίτον. Εἴσω δὲ κατὰ τὸν ὁρθὸν λόγον καὶ κατὰ τὸν εἶκόστα τὸ μὲν τῆς πυραμίδος στερεῶν γεγονός εἰδός πυρὸς στοιχεῖον καὶ σπέρμα: τὸ δὲ δεύτερον κατὰ γένεσιν εἴπωμεν ἀέρος· τὸ δὲ τρίτον ἐδάκτον, πάντας δὲ ταῦτα δεῖ διαγενείσθαι σμικρὰ ὄντως, ως καθ’ [56] ἐκ ἑκαστοῦ μὲν τοῦ γένους ἑκάστου διὰ σμικρότατου οὐδενοῦ ὁφ’ ἡμῶν, συναρμοσθέντων δὲ πολλῶν τούς ὀργοὺς αὐτῶν ὀράσαμεν καὶ δὴ καὶ τὸ τῶν ἀνάλογων περὶ τὰ πλήθη καὶ τὰς κινήσεις καὶ τὰς ἄλλας δυνάμεις πανταχῦ τὸν θέον, ὀσπερὴ ἤ τῆς ἀνάγκης ἔκκοσσα πεισθεῖσα τὰ φύσις ὑπέκειν, ταύτῃ πάντῃ δὲ ἀκριβείας ἀποτελεθεισῶν ὕπ’ αὐτοῦ συνηρμόσθαι ταῦτα ἀνά λόγον.
καὶ τὸ μὲν δὴ πρὸ τοῦτον πάντα ταῦτ’ εἶχεν ἀλόγως καί ἀμέτρως: ὡτε δ’ ἐπεχειρεῖτο κοσμεῖσθαι τὸ πᾶν, πῦρ πρῶτον καὶ ὄδωρ καὶ γῆν καὶ ἀέρα, ἵνα μὲν ἔχοντα αὐτῶν ἄττα, παντάτασι γε μὴν διακείμενα ὡσπερ εἰκός ἔχειν ἄταν ὅταν ἀπ’ τίνος θεός, οὕτω δὴ τότε πεφυκότα ταῦτα πρῶτον διεσχηματίσατο εἰδείς τε καὶ ἀριθμοῖς.

Timaeus 53a9–b5

οὔτω δὴ τούτων οиδέτοτε [498] τῶν αὐτῶν ἑκάστων φανταξομένων, ποίον αὐτῶν ὡς ὁν ὃποίον τοῦτο καὶ οὐκ ἄλλο παγίως διασχυρίζομενος οὐκ αἰσχυνεῖται τις ἑαυτῶν; οὐκ ἔστιν,
Τιμάεις 49d3–e7

άλλ᾽ ἀσφαλέστατα μακρῷ περὶ τούτων τιθεμένοις ὥστε λέγειν: ἀεὶ ὁ καθορόμεν ἄλλοτε ἄλλῃ γνώμῃ, ὡς πέρ, μὴ τοῦτο ἄλλα τὸ τοιοῦτον ἐκάστοτε προσαγορεύειν πέρ, μηδὲ ἐδώρ τοῦτο ἄλλα τὸ τοιοῦτον ἀεὶ, μηδὲ ἄλλο ποτὲ μηδὲν ὡς τινὰ ἔχον βεβαιώτητα, ὡσα [49e] δεικνύντες τῷ ῥήματι τῷ τόδε καὶ τοῦτο προσχρόμενοι δηλοῦν ἤγομεθα τι: φεύγει γὰρ οὐχ ὑπομένων τὴν τοῦ τόδε καὶ τοῦτο καὶ τὴν τρίδε καὶ πάσαν ὡσὶ μόνη μόντα αὐτὰ ἐνδείκνυται φαίσις. ἀλλὰ ταῦτα μὲν ἐκάστα μὴ λέγειν, τὸ δὲ τοιοῦτον ἀεὶ περιφερόμενον ὁμοιὸν ἐκάστου πέρι καὶ συμπάντων ὀὕτω καλεῖν, καὶ δὴ καὶ πέρ τὸ διὰ παντὸς τοιοῦτον, καὶ ἀπαν ὁσσοντερ ἄν ἐξ ἔν γένεσιν

Τιμάεις 51a4–b6

dιό δὴ τὴν τοῦ γεγονότος ὑποτικοῦ καὶ πάντως αἰσθητοῦ μητέρα καὶ ὑποδοχὴν μήτε γὰρ μήτε ἀέρα μήτε πέρ μήτε ὅδωρ λέγωμεν, μήτε ὡσα ὡς τούτων μήτε ἢς ὡς ταῦτα γέγονεν: ἀλλ᾽ ἀνόρατον εἰδός τι καὶ ἀμορφον, πανδέχες, μεταλαμβάνον [51β] δὲ ἀπορώτατα τῇ τοῦ νοητοῦ καὶ δυσαλωτότατον αὐτὸ λέγοntες οὐ φευσζεθα. καθ᾽ ὅσον δ᾽ ἐκ τῶν πρεσβευκόνων δυνατῶν ἐφικνείσθαι τῆς φύσεως αὐτοῦ, τῇδ᾽ ἄν τις ὁρθότατα λέγον πέρ μὲν ἐκάστοτο αὐτοῦ τῷ προσταμένον μέρος φαίνεσθαι, τὸ δὲ ὕγρανθὲν ὅδωρ, γὴν τε καὶ ἀέρα καθ᾽ ὅσον αὐτὸ μημήματα τουτῶν δέχεται.

Τιμάεις 61d5–62b6

Zeno of Elea

Simplicius, *Physics*, 141.2–8. (= DK29B1)

* ei δὲ ἐστιν, ἀνάγκη ἐκαστον μέγεθος τί ἐχειν καὶ πάχος καὶ ἀπέχειν αὐτοῦ τὸ ἐτερον ἀπὸ τοῦ ἐτέρου. καὶ περὶ τοῦ προέχοντος ὁ αὐτὸς λόγος, καὶ γὰρ ἐκεῖνο μέγεθος καὶ προέζει αὐτοῦ τι. ὧροιν δὴ τούτῳ ἅπαξ τε εἰπεὶν καὶ ἂει λέγειν· ὃ ὀὔδεν γὰρ αὐτοὶ τοιοῦτον ἐσχατον ἐστι τοῦ ἐτερον πρὸς ἐτερον οὔκ ἐσται. οὕτως εἰ πολλά ἐστιν, ἀνάγκη αὐτά μικρά τε ἐίναι καὶ μεγάλα· μικρά μὲν ὡστε μὴ ἔχειν μέγεθος, μεγάλα δὲ ὡστε ἂπειρα εἶναι.

If it is, each thing must have some size (μέγεθος) and thickness (πάχος), and part of it must be apart from the rest. And the same reasoning holds concerning the part that is in front. For that too will have size, and part of it will be in front. Now to say this once is the same thing as to keep saying it forever. For no such part of it will be the last or unrelated to another. Therefore if there are many things, they must be both small and large; so small as not to have size, but so large as to be infinite.


* ei γὰρ ἄλλῳ ὀντι, φησί, προσγενόται, οὐδὲν ἃν μετίζων ποιῆσιεν· μεγέθως γὰρ μηδενός ὀντος, προσγενομένου δὲ, οὐδέν οἷον τε εἰς μέγεθος ἐπιδοῦναι. καὶ οὕτως ἃν ἥδη τὸ προσγενόμενον οὐδὲν εἴη. εἰ δὲ ἀπογινομένου αὐξήσεται, δῆλον ὅτι τὸ προσγενόμενον οὐδὲν ἢν οὐδὲ τὸ ἀπογινόμενον.

For if it should be added to something else that exists, it would not make it any larger. For if it were of no size and were added, nothing it is added to could increase in size. And so it follows immediately that what is added is nothing. But if the other thing is no smaller when it is subtracted and it is not increased when it is added, clearly the thing added or subtracted is nothing.

Simplicius, *Physics*, 140.29–33. (= 29B3)

* εἰ πολλὰ ἐστιν, ἀνάγκη τοσατά εἶναι ὅσα ἐστί καὶ οὕτε πλείονα αὐτῶν οὕτε ἐλάττονα. εἰ δὲ τοσατά ἐστιν ὅσα ἐστί πεπερασμένα ἂν εἴη, εἰ πολλὰ ἐστιν ἀπειρα τὰ ὄντα ἐστιν· ἂει γὰρ ἐτερα μεταξὸ τῶν ὄντων ἐστί, καὶ πάλιν ἐκείνων ἐτερα μεταξό, καὶ οὕτως ἀπειρα τὰ ὄντα ἐστί.

If there are many, they must be just as many as they are, neither more nor less. But if they are as many as they are, they must be limited. If there are many things, the things that are are unlimited, since between things that are there are always others, and still others between those. Therefore the things that are are unlimited.

Simplicius, *Physics*, 139. 18–19

... οὐδὲν ἔχει μέγεθος ἐκαστον τῶν πολλῶν ἐκ τοῦ ἑαυτῷ ταύτόν εἶναι καὶ ἕν.

...no one of the Many has magnitude, as each is the same as itself and one.

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32 Translations of 29B1, 29B2, and 29B3 are from CCR, while the translation of *Physics*, 139.18–19 is mine.
VII.2 List of Claims

Chapter II

Elements as realisers: the elements constitute the necessary (though not sufficient) conditions for there to be the World Body as a composite entity. In this direction, the proportion (i.e., the structure), on the one hand, and the elements (i.e., the categorical aspect), on the other, are jointly necessary for there to be the World Body (i.e., the composite) — such that the role of the elements is to realise the structure (thus yielding the whole).

Cosmic Architecture: the elemental bodies (qua elements of structures) a-symmetrically depend on the Cosmos, conceived of as the ultimate (structured) whole (i.e., categorical structure).

Structural units: given the elemental solids’ peculiar constitution, we can say that structure is not only instantiated at the Cosmic level (i.e., Cosmic Architecture) but also at the elemental level.

Downward composition: even though for the purposes of his account in the Timaeus the two basic triangles constitute the bottom-most level of composition of physical reality, at 53d4–7, Plato warns the reader that it is metaphysically possible that further levels of lower composition may exist.

Ubiquitous structure: given the mathematical property of the basic triangle of having their internal structure replicated without limit, and in light of my proposed reading of 53d6–7 (i.e., Downward composition), one can say that the Timaean mereological picture allows for structure to go all the way down — such that structure is not only instantiated at the Cosmic (i.e., Cosmic Architecture) and at the elemental (i.e., Structural units) but also at the sub-elemental level.

Formal continuity: it is not only the case that, in the Timaean picture of reality, structure is instantiated at the Cosmic level (i.e., Cosmic Architecture), at the elemental level (i.e., Structural units), and at the sub-elemental level (i.e., Ubiquitous structure), but there is also a solid indication that the instantiated structure is of one single kind — such that there is strong formal continuity between the Cosmos (qua structured whole) and the elements (qua structured wholes).

Timaean mereology: all entities (qua categorical structures) a-symmetrically depend on the Cosmos, conceived of as the ultimate (structured) whole (i.e., the ultimate categorical structure) which all entities are parts of — such that there is a downward necessitation from wholes to their parts, all the way down.

Platonic Cosmological Monism (PCM): there is only one basic entity, the Cosmos, such that all other entities which populate the physical reality do exist but are not basic. In fact, all entities a-symmetrically depend on the Cosmos, conceived of as the ultimate (structured) whole (i.e., the ultimate categorical structure) which all entities are parts of, such that there is a downward necessitation from wholes to their parts (all the way down).
Chapter III

**Elemental properties**: elements, as we refer to them in ordinary language, are properties, not things, that is, they describe a state of affairs of something (τοῦ...τον) being such and such (τοιο...τον) — such that what we call ‘fire’ is a portion of the Receptacle (τοῦ...τον) bearing the property ‘fire’ (τοιο...τον).

**Dual nature**: the elements, as described in the Timaeus (with reference to the cosmic state of affairs), have some sort of a dual nature, insofar as they are qua regular solids, but also have a categorical aspect (that is, one which exceeds their being instances of the regular solids, and is described as their ‘natural condition’) — such that the element’s being qua regular solids does not exhaust the full nature of the elements.

**Elements qua polyhedra**: the first aspect of the (dual) nature of the elements, namely the elements conceived of qua regular solids, refers to the nomic profile of the elemental properties — such that the aspect ‘elements qua regular figures’ accounts for how the elements relate to each other and thus how they behave in nature.

**Mathematical quantifiability**: the Elements qua polyhedra aspect of the elements is fully and solely accountable for via a purely quantitative language (i.e., via numbers and shapes).

**Elements qua qualia**: the aspect of the nature of the elemental properties which we have called elements πέφυκεν (that is, the categorical aspect) is to be understood not only as non-relational and non-quantitative, but as phenomenal and qualitative (i.e., as a quale).

**Metaphysical contributions**: the metaphysical contribution of the structural aspect (i.e., Elements qua polyhedra) to (the nature of) the elemental property is to constitute its nomic role (thus activating its causal capacities); while the metaphysical contribution of the categorical aspect of an elemental property (i.e., Elements qua qualia) is to ground the phenomenal appearance of the property in the observable world — such that both aspects play essential but different roles towards the nature of the elemental property.

**Timaean Metaphysics of Properties**: elements are properties (i.e., Elemental properties) and have a dual nature (i.e., Dual nature). Under its structural aspect, a property is defined on the basis of how it interacts with other properties (and thus the structural aspect of properties accounts for the nomic relations that preside over the causal functioning of the Cosmos) (i.e., Elements qua polyhedra) — and it is entirely accountable for via the quantitative language of physical science (i.e., Mathematical quantifiability). Under its categorical aspect, a property is eminently phenomenal (i.e., Elements qua qualia) and constitutes the qualitative appearance of the natural world (i.e., Metaphysical contributions).
**Platonic (Dual-Aspect) Power-qualityism:** elements are properties (i.e., *Elemental properties*) and have a dual nature (i.e., *Dual nature*). Under its structural (or dispositional) aspect, a property is defined on the basis of how it interacts with other properties (and thus the structural aspect of properties accounts for the nomic relations that preside over the causal functioning of the Cosmos) (i.e., *Elements qua polyhedra*) — and it is entirely accountable for *via* the quantitative language of physical science (i.e., *Mathematical quantifiability*). Under its categorical aspect, a property is eminently phenomenal (i.e., *Elements qua qualia*) and constitutes the qualitative characteristic of the world as it appears to us (i.e., *Metaphysical contributions*). Finally, the two aspects (which result from the application of the *qua*-operator) are distinct, but equally fundamental (i.e., each of the two aspects is *essential*, but neither is *sufficient*, to yield our observable world of sensibles); and they should not be seen as *mereological parts* of the property, but as supervenient on it (and thus, as *nothing over and above* the property).

Chapter IV

**Platonic Cosmological Power-qualityism:** as for what is there in the physical reality, we can say that there is the *Cosmos*, which is the only basic entity, and that this Cosmos is an essentially structured entity (i.e., a categorical structure), such that it has parts (which, in turn, are also categorical structures) all the way down — where these parts correspond to the physical entities we interact with in our everyday experience. As for how physical entities are (that is, the nature of the properties that they bear), the Cosmos (as entirely constituted by the elements) should be seen as having a dual nature. Under its structural/dispositional aspect, it consists of a net of nomic relations — which determine the (causal) behaviour of entities in nature. Under its categorical aspect, it is non-quantitative and phenomenal in kind — which constitutes the qualitative character of our familiar experience of the world (i.e., phenomenal *qualia*). Finally, the two aspects (which result from the application of the *qua*-operator) are distinct, but equally fundamental (i.e., each of the two aspects is essential, but neither is sufficient, to yield our observable world of sensibles); and they should not be seen as mereological parts of the property, but as supervenient on it (and thus, as nothing over and above the property).