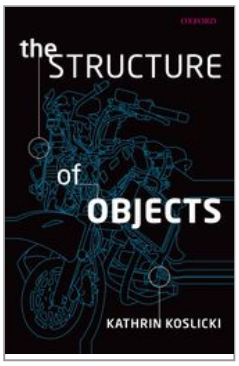

The Structure of Objects
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The Role of Structure in Plato's Mereological Writings

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Abstract and Keywords

The methodological and ontological considerations that arose in connection with Kit Fine's theory of embodiments provide motivation to search for an alternative approach which preserves the neo-Aristotelian spirit of Fine's account while avoiding its troubling features. Since the kind of theory of composition for which we are aiming has its historical origins in Aristotle, and, as it turns out in Plato as well, the next two chapters examine some of the rich and rewarding writings of these two ancient authors on parts and wholes, turning first to Plato's mereological writings and Verity Harte's recent insightful readings of them (especially in her *Plato on Parts and Wholes: The Metaphysics of Structure*); Aristotle's treatment of parts and wholes will be the subject of the following chapter.

Keywords: Kite Fine, theory of embodiments, Aristotle, Plato, Verity Harte, parts, wholes

§V.1 Introductory Remarks

The object of Chapter IV was two-fold: first, to present what I take to be convincing reasons for abandoning a CEM-style analysis of ordinary material objects as three-dimensional or four-dimensional mereological sums; and, secondly, to evaluate the most explicit and detailed modern-day alternative to a CEM-style theory, which takes these considerations into account, viz., that developed by Kit Fine in a series of papers over the past twenty years or so. The two main considerations which motivate Fine's own departure from the standard CEM-style approach are, first, the “aggregative” objection, according to which

the standard approach assigns simply the wrong, set-like conditions of existence and spatio-temporal location to ordinary material objects; and, secondly, the "monster objection", which brings out a crucial element in the analysis of ordinary wholes that is completely absent from the standard account, viz., that of *structure* or *manner of arrangement*.

In response to the "aggregative" objection and the "monster" objection, Fine proposes an alternative account, which takes both the idea of structure, or manner of arrangement, as well as the requirement of spatio-temporal proximity very seriously. The resulting theory of *rigid* and *variable embodiments*, whose most detailed statement is found in Fine (1999), was evaluated in detail in the previous chapter. While the neo-Aristotelian spirit of this theory, with its widely applicable, "sparse" and hierarchical conception of parthood is quite attractive and ought to be preserved, it also gives rise to a number of serious methodological and ontological concerns. First, it leads to a methodologically suspect proliferation of primitive, *sui generis* relations of parthood and composition, distinct ones for different domains of objects, whose characteristics and connections must be explicitly imposed on these relations by means of separate bodies of postulates, specifically tailored to each domain; the resulting approach takes on an overly fractured and stipulative air. Secondly, Fine's theory, in part because of its acceptance of an exceedingly liberal existence principle, is committed to a superabundance of objects, an ontology which far outstrips the (to many of us) already over-abundant ontology of standard mereology: each region of space-time **(p.94)** turns out to be occupied by a dizzying array of numerically distinct (and yet, in some cases, *necessarily coextensive*) objects, whose persistence conditions from an ordinary point of view look quite bizarre; as a result, Fine's theory gives rise to plenty of "monsters" of its own. Thirdly, given their formal profile, we are left to wonder, especially in light of the considerations noted in the first objection, what makes these primitive, *sui generis* relations posited by Fine's system genuinely *mereological* in character: certainly, to recall a remark by Lewis quoted in Chapter I, a philosopher who already harbors doubts that any system other than CEM could capture a genuinely mereological operation might react to Fine's theory of embodiments in this fashion; but even those of us who are open to the possibility of genuinely mereological non-CEM-style systems, in this case, I think would be sympathetic to the Lewisian challenge.

These methodological and ontological considerations provide motivation to search for an alternative approach which preserves the neo-Aristotelian spirit of Fine's theory while avoiding its troubling features. Since the kind of theory of composition for which we are aiming has its historical origins in Aristotle, and, as it turns out in Plato as well, I want to examine, in the next two chapters, some of the rich and rewarding writings of these two ancient authors on parts and wholes. Even though the texts in question of course raise numerous interesting and difficult interpretive questions and have generated a voluminous literature

in ancient philosophy, I will in what follows be less concerned to participate in these scholarly debates than to approach Plato's and Aristotle's remarks from the point of view of a contemporary metaphysician who is interested simply in finding the *right* theory of parthood and composition for ordinary material objects. I turn first to Plato's mereological writings and Verity Harte's recent insightful readings of them (especially Harte 1994, 1996 and 2002); Aristotle's treatment of parts and wholes will be the subject of the following chapter.[1]

§V.2 The Negative Mereological Undercurrent

Although neither Plato's nor Aristotle's corpus includes a separate treatise that is devoted specifically to the discussion of parts and wholes, questions of mereology were clearly very much on their minds and suggestive remarks concerning mereology can be found scattered throughout many of their works. In some cases, these remarks are extremely condensed and mystifying; in other cases, the discussion is quite extensive and, despite the absence of explicit axioms and theorems, might fairly be viewed as adding up to something close to a theory, or at least a conception, of parthood and composition.

(p.95) In Plato's case, Harte (2002) identifies both what she calls a *negative mereological undercurrent* and a *positive mereological undercurrent*: in the former, Plato is concerned to explore conceptions of composition he finds to be lacking in some respect; in the latter, he aims to develop his own positive proposal. Harte locates texts that belong to the first group primarily in passages from the *Theaetetus*, *Parmenides*, and *Sophist*;[2] those that belong to the second group, she argues, can be found in the *Parmenides*, *Sophist*, *Philebus* and *Timaeus*.[3] Harte impressively weaves together these diverse and difficult contexts to construct a reading of Plato which portrays him as being concerned precisely to take a stand on what we would now describe as Peter van Inwagen's "Special Composition Questions", the question "Under what conditions do *many* things compose *one* thing?" (van Inwagen 1990), and to come out against David Lewis' Axiom of Unrestricted Composition, according to which *any* plurality of objects whatsoever, no matter how disparate and dissimilar, composes a further object, their mereological sum (Lewis 1991). Moreover, if Harte is right, Plato should be regarded not only as a serious contender in the contemporary debate over the nature of mereological composition, alongside such current theorists as David Lewis, David Armstrong and Peter van Inwagen; Plato's theory in fact, she argues, has an edge over contemporary alternatives precisely because of the prominent role it assigns to the notion of *structure*.

In the negative phase of his mereological writings, Plato is, in Harte's view, primarily concerned to problematize a particular view of composition that is in fact surprisingly close to that of David Lewis, a kind of Composition-as-Identity view, whose ancient proponents turn out to be the commitment-shy Eleatic philosophers, the followers of Parmenides and Zeno. The central premise on which this view turns is the principle Harte calls the "Pluralizing Parts

Principle" (PPP), according to which a whole is *many*, as many as its parts. A sample appeal to PPP can be found, for example, in the First Deduction of the *Parmenides*:

> Then, on both grounds, the One would be composed of parts, both being a whole and having parts? – Necessarily. – Then on both grounds the One would thus be *many and* ***(p.96)*** *not one*. – True. – But it must be not many, but one. – It must. – Then *if the One will be one, it will neither be a whole nor have parts*. – It won't.
>
> (*Prm*. 137c9–d3)[4]

Due to the implicit acceptance of PPP, the mere presence of *many* parts in an object (in this case, the Parmenidean "One") is here seen as a threat to that object's unity, to its being genuinely *one*: in other words, parts in and of themselves are viewed as pluralizing an object, according to PPP. The result is a paradoxical-seeming "many-one" entity, reminiscent of what we found in Lewis' wavering discussion of the Composition-as-Identity Thesis discussed earlier in Chapter II, in which he is tempted both straightforwardly to *identify* an object with its many parts (leaving us with an object that would appear to be *many*, as many as its parts) and to draw a mere *analogy* between composition and identity (leaving at least a precarious opening for complex wholes that are *one* despite their many parts). Plato eventually finds this model of composition to be untenable precisely because it fails to make room for wholes that are genuinely *one* despite the fact that they have *many* parts.

While the Composition-as-Identity model seems to be the one which most occupies Plato in these passages, Harte also notices other conceptions that crop up here and there: a *container*-model, briefly entertained in the Second Deduction of the *Parmenides* (*Prm*. 144e3–145a3), according to which wholes are viewed as completely disjoint from their parts;[5] a sort of *Nihilist* conception, sometimes at work for example in the *Theaetetus*' Dream-Argument and in the *Parmenides*' First Deduction, according to which (trivially) the only wholes are *mereological atoms*; and, finally, a picture of wholes, which makes an appearance, for example, in the *Parmenides*' Seventh Deduction, according to which wholes are *bare pluralities*, i.e., not really one at all. All of these models are ultimately rejected by Plato, sometimes without explicit discussion; but, in other cases (particularly that of the Composition-as-Identity model), we see Plato going to great lengths to bring out the paradoxical results to which these unacceptable models lead.

§V.3 The Positive Mereological Undercurrent

The positive mereological undercurrent in Plato's writings takes up a suggestion briefly made, but not further developed, in the *Theaetetus*, according to which wholes are to be viewed as something that is genuinely *one*, viz., as *some single form* (μίαν τινά ἰδέαν): **(p.97)**

> Look here, what do we mean by “the syllable”? The two letters (or if there are more, all the letters)? Or do we mean *some single form* [μίαν τινά ἰδέαν] produced by their combination?
>
> (*Tht*. 203c4–6; Levett/Burnyeat translation)

We come across this conception of wholes as genuinely unified again in sections of the *Parmenides* and *Sophist*; but these discussions pale in comparison with the wealth of detail that is provided in the *Philebus*’ treatment of “limit”, “unlimited” and “mixture”, as well as in the *Timaeus*’ creation stories. From these texts, Harte assembles for us the following positive characterization of Platonic wholes.

(i) *Unity*. As against the pluralized wholes of the Composition-as-Identity model, wholes according to the new conception are genuinely *unified*. To bring out the intimate relation into which the parts of such a genuinely unified whole must enter, Plato invokes, especially in the *Sophist* and *Philebus*, a rich and suggestive vocabulary consisting of terms like “weaving together” (συμπλέκειν), “blending” and “mixing” (συγκεράννυσθαι, συμμείγνυσθαι), “communing” and “combining” (ἐπικοινωνεῖν, κοινωνεῖν), as well as “fitting together” or “harmonizing” (συναρμόττειν, συμφωνεῖν). Some of these terms have connotations which also relate to feature (vi) below.

(ii) *Ontological Commitment*. When parts of the right kind enter into the intimate relationships described by Plato's body of metaphors cited in (i), the result is the *creation* of a new object, to which we were in no sense already committed previously; thus, contra Lewis, the Platonic conception of composition is *ontologically loaded*. Plato's new conception of wholes as clearly numerically distinct from their parts is brought out well in the following passage from the *Parmenides*:

> Everything, I take it, is related to everything else as follows: it is either *the same* [ταὐτόν] or *other* [ἕτερον], or, if it is neither the same nor other, it would either be a *part* [μέρος] of that to which it is thus related or be related as *whole* [ὅλον] to part.
>
> (*Prm*. 146b2–5)

As highlighted by Harte, Plato in this passage explicitly disassociates himself from the Composition-as-Identity conception which endorses PPP, since he specifically differentiates the relations of parthood and composition from those of numerical identity and distinctness.

(iii) *Restricted Composition*. Again contra Lewis, composition, for Plato, is also *restricted*, in that not all pluralities of objects are capable of entering into the requisite relationship; only certain combinations of objects result in a genuinely unified whole. The restricted nature of composition is of special concern to Plato, for example in the *Sophist*, in the context of the discussion of the “mixing”

of the “kinds” (here, “Being”, “Change” and “Rest”) in connection with the so-called “Late Learners”:

> Then shall we not fasten being to change or rest, nor anything to anything else, but rather take them to be unmixed (ἄμεικτα) and thus incapable of having a share of **(p.98)** each other in our assertions (λόγοι)? Or shall we gather them all together in the same, as being capable of combining (ἐπικοινωνεῖν) with each other? Or shall we suppose that *some can* and *some cannot*? Which of these shall we say that these people choose, Theaetetus?
>
> (*Spht*. 251d5–e1)

The options Plato is here outlining are that composition be conceived of either (i) as *never* occurring (as on the Nihilist model) or (ii) as *universal* (as on the Composition-as-Identity model) or (iii) as *restricted* (as, for example, on the model of van Inwagen 1990, according to which only parts whose activity constitutes a single *life* compose an object). The option Plato explicitly chooses is the third, that of restricted composition: only *some* things can combine to form a genuine whole. One of Plato's examples in the *Sophist* to illustrate the restricted nature of composition is that of letters and syllables; another one that of musical sounds:

> Since some things are willing to do this [to combine] and some things are not, they will be affected in just the same way as the *letters of the alphabet*; for some of these do not fit together with each other and some do fit together (συναρμόττειν).
>
> (*Spht*.252e9–253a2)
>
> Again, isn't it the same as regards *sounds* of high and low pitch? Isn't the one who has the skill (τέχνη) to know which blend (συγκεραννυμένους) and which do not musical (μουσικός), whereas the one who does not know is unmusical?
>
> (*Spht*. 253b1–3)

(iv) *Structure/Content Dichotomy*. Perhaps most centrally, a Platonic whole consists of two components, which Harte identifies as *structure* and *content*. “Structure” tends to be characterized by Plato as something that is *mathematically* expressible (number, measure, ratio, proportion and the like); “content”, that on which structure is imposed, remains a bit murky, since not much of a positive nature is said about it. In the *Philebus*, the structure/content dichotomy is aligned by Harte with the distinction between *limit* (πέρας) and *unlimited* (τὸ ἄπειρον), that which admits of the “more and less”, a domain delineated by pairs of opposing qualities such as hot and cold; a whole resulting from the combination of the two is called a *mixture* (μίξις or τὸ μεικτόν). The

following passage illustrates the three elements of “limit”, “unlimited” and “mixture” in the *Philebus*’ analysis of complex wholes:

> Whatever seems to us to become “more and less”, or susceptible to “strong and mild” or to “too much” and all of that kind, all that we ought to subsume under the genus of the *unlimited* as its unity. This is in compliance with the principle we agreed on before, that for whatever is dispersed and split up into a multitude, we must try to work out its unifying nature as far as we can, if you remember. – I do remember. – But look now at what does not admit of these qualifications but rather their opposites, first of all “the **(p.99)** equal” and “equality” and, after the equal, things like “double”, and all that is related as number to number or measure or measure: If we subsume all these together under the heading of “*limit*”, we would seem to do a fair job. Or what do you say? – A very fair job, Socrates. – Very well, then. But what nature shall we ascribe to the third kind, the one that contains the *mixture* (τὸ μεικτόν) of the two?
>
> (*Phlb*. 24e7–25b6; Frede translation)

In the *Timaeus*, Harte sees structure manifesting itself as the demiurge's *geometrical proportion* (“ἀναλογία”) or *order* (“τάξις”), which she reads as “configurations of space”. Content is that which is being configured, i.e., either the *four elements* (in the story surrounding the creation of the body of the cosmos) or (in the story surrounding the creation of the four elements) the *receptacle* (ὑποδοχή), which Harte reads simply as *space*.[6]

(v) *Priority of Wholes over Parts*. Platonic wholes, on Harte's reading, are in some way *prior* to and more *basic* in Plato's ontology than their parts; parts, as she puts it, are *structure-laden*; their existence and identity is in some sense (whose precise nature remains unspecified) *dependent* on the wholes of which they are part. One of Harte's main direct pieces of textual evidence for the attribution of this feature to Plato is the following intriguing passage from the *Philebus*:

> Any blend (σύγκρασις) which does not have measure (μέτρος) or the nature of proportion (σύμμετρος) in any way whatsoever, of necessity *destroys both its ingredients and, primarily, itself*. A thing of this sort is truly *no blend at all*, but a kind of *unblended disaster*, a real disaster for the things which acquire it.
>
> (*Phlb*. 64d9–e3)

In this passage, Plato appears to be saying that the very same object cannot at one point be a part (or “ingredient”) of a genuine whole or “mixture”, i.e., one which has “measure” and “proportion”, and at another point cease to be a part of such a mixture, but nevertheless survive intact; for without the mixture, so Plato seems to be saying, the “ingredients” themselves are “destroyed” as well.

(vi) *Normativity and Teleology*. As is widely documented by Harte, especially across the *Philebus* and *Timaeus*, Platonic wholes have a *normative* and *teleological* character: they are described by Plato as “complete” or “perfect” (τέλειος), “harmonious” (σύμφωνα), “commensurate” (σύμμετρα), “ordered” (διακεκομισμένα) and “good” (καλά); on a literal reading of these texts, their creation is governed by a divine agent who arranges everything for the best.

(p.100) (vii) *Proper Objects of Science*. Due to the mathematical nature of structure and the teleological cause underlying the creation of Platonic wholes, these wholes are *intelligible*, and they are in fact the *proper objects of science*; all of Plato's examples of wholes are chosen from such domains as grammar, music, medicine, meteorology, philosophy and cosmology to bring home this point. To illustrate, recall the passage from the *Sophist*’s discussion of the “Late Learners” quoted above (*Spht*. 253b1–3) in which Socrates emphasizes the “skill” (τέχνη) of someone who has the requisite knowledge concerning the proper combination of high and low pitches; such a person is called a “μουσικός”, someone who is versed in the science of music. References of this kind are abundant especially in the *Sophist*, *Philebus* and *Timaeus*.

In sum, Platonic wholes, as they have been described in this section, have the following features: they are (i) genuinely *unified*; (ii) *ontologically loaded*; (iii) governed by a *restricted* notion of composition; (iv) comprised of the two components of *structure* and *content*; (v) ontologically *prior* to their parts; (vi) *normative* and *teleological* in nature; as well as (vii) inherently *intelligible* and the *proper objects of science*. I turn now to a discussion of some of the substantive features of this theory, as viewed from a contemporary perspective, as well as to some questions I want to raise about Harte's account of it.

§V.4 Platonic Wholes

While some of the features of Platonic wholes could be incorporated quite easily into a contemporary neo-Platonic theory of parthood and composition, others may strike us as peculiar or controversial, perhaps most of all those in (vi) and (vii).

§V.4.1 Normativity, Teleology, Intelligibility and Unity

(vi) *Normativity and Teleology*. Plato's thesis in the *Philebus* that *all* genuine mixtures have normative and teleological features and, even more controversially, that these normative and teleological features are exclusively *positive* (viz., all genuine mixtures are “complete” or “perfect”, “commensurate”, “ordered” and “good”), is surely impossibly strong and not particularly plausible, from a contemporary point of view; its justification relies on the invocation of a centralized, and apparently theological, teleology, whose existence could not be taken for granted by a modern-day mereologist. We may well wish to attribute normative and teleological features to *some* wholes, but such an attribution

would need to be argued for, with much ingenuity, on a case-by-case basis, and could not with any credibility be restricted only to positive characteristics.

What, for example, might be the positive normative or teleological features present in a cancer cell or in a quantity of radioactive waste? There are different **(p.101)** ways in which Plato could approach such entities, depending, first, on whether he does or does not view them as having the relevant positive normative and teleological features and depending, secondly, on whether he does or does not assign to them genuine whole status of some kind. (a) First, Plato could insist on viewing such entities as cancer cells or quantities of radioactive waste as genuine wholes or "mixtures" which are "complete" or "perfect", "commensurate", "ordered" and "good", just like musical melodies and health, even though they may not appear that way to us (presumably in virtue of our limited epistemic perspective). (b) Secondly, he could treat them as *unities* of some kind, though not as genuine "mixtures", precisely because they lack the requisite positive normative and teleological features; in that case, we end up with what seems to be suggested in the passage from *Phlb*. 64d9–e3 quoted above in connection with feature (v), in which Plato distinguishes between genuine wholes or "mixtures" and "unblended disasters":[7] a kind of "two-tiered" system of wholes, the "full-fledged" ones which have positive normative and teleological features (the "mixtures") and the more "marginal" ones which lack such features (the "unblended disasters").[8] (c) Thirdly, he could deny such entities "whole" status altogether and view them instead as "mere" "bare pluralities". (The remaining possibility, to view them as mereological atoms, does not plausibly apply here, since it would surely strike us as quite ad hoc to claim that such entities as cancer cells and radioactive waste lack parts altogether.) In the case of (c), we are left again with a "one-tiered" system of wholes, all of which can be viewed as exhibiting the requisite normative and teleological features. Thus, in sum, the different options again are: to view such entities as cancer cells and quantities of radioactive waste either as (a) genuine "mixtures" which, despite appearances, are "complete" or "perfect", "commensurate", "ordered" and "good"; or as (b) "second-class" wholes of some kind, precisely because they lack the positive normative and teleological features required for genuine "whole" status; or, finally, as (c) "bare pluralities", i.e., as entities which are not unities of any kind and which lack the normative and teleological features in question.

All of these strategies raise difficult questions for Plato. (a) If he takes the first route, we begin to wonder whether calling something "complete" or "perfect", "commensurate", "ordered" and "good" really has much bite at all, or whether it is in fact exceedingly easy for an entity to get a hold of these features. In a way, Plato's construal of the structural component of a whole as what is mathematically expressible (number, measure, ratio, proportion) lends itself to this "deflationary" reading of what it means to be "complete" or "perfect", "commensurate", "ordered" and "good", since *any* plurality of objects

whatsoever can be viewed **(p.102)** as standing in *some* mathematically expressible relation to one another. Hence, unless further constraints are imposed on *which* numbers, measures, ratios and proportions are the ones that lead to perfection, commensurability, order and goodness, it would seem that *any* plurality of objects whatsoever will come out as composing a genuine "mixture" with positive normative and teleological features. (This, of course, conflicts, among other things, with Plato's desire that composition be *restricted*.) If, on the other hand, certain numbers, measures, ratios and proportions are in fact singled out as the ones which give rise to the relevant normative and teleological features, then Plato faces the unattractive challenge of having to justify why *these* and not others; and there may be nothing further to be said in response to this challenge than that these mathematical objects are simply the ones which please the divine demiurge more than others, because, as a matter of fact, they are the ones that give rise, more so than any others, to the greatest possible cosmic harmony.[9]

(b) Secondly, suppose Plato goes the route of endorsing a "two-tiered" system of wholes, according to which some unities (the "mixtures") have positive normative and teleological features and others (the "unblended disasters") do not. The resulting theory of parthood and composition would require a radical departure from what we find in Plato's texts; for the status of something as a whole of some kind and the presence of positive normative and teleological features in that object are now completely divorced from one another. This new situation would call for a completely new explanation, first, of what accounts for the presence of positive normative and teleological features in an object, when we do find them, since the mere fact that that object is a whole of some kind can no longer be held responsible for the presence of these features; rather, their presence must now be traced to the particular *kind* of object with which we are dealing (e.g., that it is an object with a conscious mind, a work of art, etc.) and to its other characteristics. Secondly, a completely new account is now called for to explain the mereological features of the "second-class" wholes, i.e., one which makes no reference whatsoever to a centralized teleology in which everything is arranged for the best, since the "marginal" wholes of course require, just as much as their "full-fledged" cousins, their own theory of parthood and composition, **(p.103)** their own account of what binds the many parts of a whole together into one unified thing, and so on. Given the prominence of normativity and teleology in Plato's existing analysis of wholes, we have no indication of what sort of shape this new theory of wholes would take or whether Plato would have been sympathetic to this second option.

(c) Further, suppose the "unblended disasters" are excluded from "whole" status altogether and are viewed instead as "mere" "bare pluralities" of some kind, leaving us once again with a "one-tiered" system of wholes, all of which can be viewed as exhibiting the relevant positive normative and teleological features. This strategy, among other things, raises concerns similar to those cited under

consideration (a) above; for, given Plato's construal of the structural component of a whole in purely mathematical terms, one wonders of course whether the assignment of cancer cells and quantities of radioactive waste to the category of “bare pluralities” proceeded on principled grounds, or whether they were simply given this status to avoid problems for Plato's thesis that all genuine wholes (i.e., the “mixtures”) are “complete” or “perfect”, “commensurate”, “ordered” and “good”.

In sum, whichever way Plato goes, there seem to be serious problems lurking around the corner for his thesis that all genuine wholes are “complete” or “perfect”, “commensurate”, “ordered” and “good”. Needless to say, from a modern-day perspective, a mereologist who wants to follow Plato in viewing wholes as intrinsically normative and teleological (though not, presumably, in exclusively positive ways) would need to make contact with what, in our times, have been widely debated issues in areas like ethics and the philosophy of mind, viz., whether objects have irreducibly normative and teleological features at all and how to accommodate the presence of such features within a naturalistic world-view in a way that is compatible with current scientific theory, especially evolutionary biology.

(vii) *Proper Objects of Science*. Feature (vii) of Plato's account, the inherent intelligibility of wholes and their relevance to scientific study (in the broad, Greek sense of “science” which includes such domains as music and philosophy) is also tied too closely for modern tastes to Plato's particular kind of centralized teleology. For once we disassociate ourselves from this feature of Plato's account, we lack the a priori guarantee that all wholes will be in principle accessible to or, for that matter, of any interest to a rigorous discipline. For all we know, the mathematical structure of some wholes may simply exceed our cognitive abilities; others may not in themselves make suitable subject matters for scientific study (e.g., works of art or artifacts), though their microscopic constituents of course would fall into the domain of some such discipline (e.g., physics, chemistry, biology, and the like).

(i) *Unity*. The feature of unity, in contrast, is one that must be represented in some fashion by any theory (other than Nihilism) which is concerned to address van Inwagen's Special Composition Question, “Under what conditions do *many* objects compose *one* object?”. The trouble with respect to this feature is that it **(p.104)** is not clear how satisfying Plato's remarks are as a response to van Inwagen's question. To be sure, we do find in Plato's texts a rich and suggestive body of metaphors to *describe* the intimate relation into which the parts of a genuinely unified whole must enter (“weaving”, “blending”, “mixing”, “communing”, “combining”, “fitting together” and “harmonizing”). Moreover, we are also presented by Plato with a wide and interesting range of *examples* of cases in which composition takes place: (i) syllables and letters as well as “things composed of number” (such as twice three and six) and “things

measured by number" (such as acres, miles and armies) in the *Theaetetus*; (ii) "Being", the "One" and the "Many" in the *Parmenides*; (iii) the five "great kinds"—"Being", "Same", "Other", "Change" and "Rest"—as well as examples from language and music (syllables and letters; statements and terms; musical sounds and the chords or melodies they compose) in the *Sophist*; (iv) examples from music, medicine and meteorology (again, musical sounds and the chords and melodies they compose; health; and the weather) in the *Philebus*; (v) as well as the body of the cosmos and the four elements in the *Timaeus*.

Plato's body of metaphors, along with his elaborate discussion of examples, certainly goes *some* of the way towards delineating a response to van Inwagen's Special Composition Question. But, unlike Aristotle, Plato is not as obviously concerned to confront the question of how a plurality of objects can yield a unity of some kind in the most *general* of terms. For consider the kind of information we *are* given by Plato (where the open slots in what follows are often fleshed out with remarkable detail): under particular conditions, certain kinds of letters (consonants and vowels), when combined in the right way, compose a word; certain types of expressions (names and verbs), when combined in the right way, compose a statement; sounds that exhibit certain contrary qualities (e.g., high and low, slow and fast, loud and soft), when combined in the right way, compose a chord or a melody; other contrary qualities (e.g., hot, cold, moist, dry), when combined in the right way, compose a state of the body we call health or meteorological phenomena like heat waves and thunderstorms; the receptacle, when configured in the manner prescribed by certain geometrical proportions, composes the four elements; and the four elements, when configured in the manner prescribed by certain geometrical proportions, compose the body of the cosmos.

But if we ask now, "How is this list to be *continued*?" or "Why in *these* cases under *these* conditions and not in others?", no completely *general* answer is clearly forthcoming from Plato's account, except one which appeals again to the centralized teleology ("Because it is for the best this way"). In fact, as mentioned earlier, given the nature of Plato's structural component, unless some such stricture is put into place, nothing might stand in the way of composition taking place under *all* conditions and in *all* cases: for if structure is understood simply as something that is mathematically expressible (number, measure, ratio, proportion), then what is to prevent *any* plurality of objects whatsoever from **(p. 105)** composing a further object, their "mixture", unless some of these mathematically expressible relations are assigned a privileged status? In sum, while the feature of unity in itself is a desirable component of Plato's theory, we do not seem to find in Plato an explicit attempt to confront van Inwagen's question in its full *generality*, as we do in Aristotle.

(ii) *Ontological Commitment*/(iii) *Restricted Composition*. Features (ii) and (iii) require less comment than the other components of Plato's theory. For one thing, they are more easily intelligible from a contemporary point of view than some of the other features of Plato's theory. Moreover, we have already encountered indirect evidence for thinking that Plato is exactly on the right track by proposing a theory that satisfies (ii) and (iii): for we saw in Chapter II that both the Lewis/Sider argument in favor of Unrestricted Composition as well as Lewis' defense of the Composition-as-Identity Thesis are flawed in that they rely on implicitly circular reasoning; there are thus good reasons to follow Plato in accepting a restricted and ontologically committing conception of composition.

§V.4.2 Structure and Content

(iv) *Structure/Content Dichotomy*. We come then to what is perhaps the most central feature of Plato's account, the dichotomy of structure and content. And it is in connection with this feature that we encounter an aspect of Harte's account of Platonic wholes which, to my mind, is quite puzzling. Recall that the structural component of a Platonic whole (that which is mathematically expressible: number, measure, ratio, proportion) is aligned by Harte with “limit” in the *Philebus* as well as with geometrical proportions in the *Timaeus*; content (that which is being configured in these mathematically expressible ways) with the “unlimited” in the *Philebus* as well as with the “receptacle” and the four elements in the *Timaeus*.[10 , 11]

But we also find in Harte *two* very different ways of speaking of Platonic wholes. On the one hand, she often characterizes Platonic wholes as having the **(p.106)** “two-fold” nature just noted, according to which they consist of both structure and content. Under this conception, Harte refers to Platonic wholes as *contentful structures*, i.e., as the result of *combining* content with structure. On the other hand, she also takes the central thesis of her book to be that Platonic wholes *are* (to be *identified* with) structures. On the first of these readings, the relation between a Platonic whole and its structural component is that of *composition*, not identity: if a whole is conceived of as the result of combining content with structure, then clearly structure is merely one of the *components* of a whole, not all there is to the whole. According to the second thesis, on the other hand, structure is literally all there is to a whole: a whole is *identical* to structure (*a* structure?).[12] In the following passage, for example, we see Harte endorsing both of these conceptions:

> What emerges from this general theorizing and from the illustrative examples of combining and of mixing, I have argued, is a conception of wholes as *contentful structures*. Structure, according to this conception, is essential to the constitution of a whole. Indeed, wholes, I have argued, are here best thought of as *being* (instances) of [sic] structures and not as

> things that “have” structure in a way that makes structure seem more or less detachable from the whole and its parts.
>
> (Harte 2002, p. 268; my italics)[13]

Harte's explicit endorsement of the second conception (“wholes as *identical* to structure”) is certainly not difficult to document; for example, in the “Introduction” to her book, she describes Plato's alternative model of composition as being one according to which “wholes *are* structures” (Harte 2002, p. 3; my italics).
Quite clearly, Harte's alignment of structure with the Phileban “limit” as well as the geometrical proportions of the *Timaeus* favors the *first* of these interpretations, the “wholes as *composed* of structure” model. For if structure is **(p.107)** understood as what is mathematically expressible (number, measure, ratio and proportion), it simply cannot be all there is to a whole; otherwise, all wholes will literally turn out to *be* mathematical objects and we will end up with a universe populated with mathematical objects that is perhaps more Pythagorean than even Plato would want it to be: for example, the bathwater Harte considers as an example of a perfect Phileban mixture of hot and cold water will then be *identified* with, say, the mathematical ratio 2:1; but, as Harte herself acknowledges, it is of course difficult and ultimately not very satisfying to bathe in a mathematical ratio.

In addition to yielding an overly Pythagorean universe populated with mathematical objects, the “wholes as *identical* to structures” reading also does violence to several of the main tenets of Plato's analysis of wholes. For one thing, it leaves no room for any genuine content/structure *distinction*, since the identification of wholes with structures puts content out of its job of acting as the *second* member of the structure/content dichotomy. Moreover, this way of thinking of wholes would of course also remove the need for an application of the composition relation, i.e., the relation Plato describes by means of the body of metaphors (“weaving together”, “mixing”, “blending”, etc.) discussed earlier in connection with feature (i), the unified nature of wholes: for if wholes are literally *identical* to structures, then structures do not need to be *combined* with anything else to yield wholes. Of course, there may still be occasion for the composition relation to apply *within* the structural component, if, as we will observe explicitly in the case of Aristotle's treatment of parts and wholes, structures themselves are viewed as mereologically complex. However, Plato's purpose in invoking his body of metaphors does not seem to be to describe how, say, one number is “woven together” with another number; rather, like Aristotle, he seems to want the relata of the “weaving together”, and other, relations to be of *distinct ontological kinds*, e.g., numbers, on the one hand, and musical sound, on the other. Given the overwhelming evidence in favor of the “wholes as *composed* of structure” model, let's investigate why Harte is nevertheless

tempted to endorse the “wholes as *identical* to structures” model as well, leaving us with two distinct and incompatible characterizations of Platonic wholes.[14]

(p.108) §V.4.2.1 *The Aristotelian Regress in* Met. *Z.17* [15]

Harte of course has good reason to be tempted by the “wholes as *identical* to structures” model. She puts forth several arguments in favor of this conception in the beginning of Chapter 4 of her book, to which I turn in the next section. However, it seems that the main motivation which drives Harte to the identification of wholes with structures is the Aristotelian regress argument from *Metaphysics* Z.17. Since this argument occurs in the context of a passage that contains many of Aristotle's most central distinctions for the purposes of his treatment of parts and wholes, I will cite a longer segment of the text within which the regress argument occurs; the regress itself is marked in boldface:

> As regards that which is compounded [σύνθετον] out of something so that the whole [τὸ πᾶν][16] is one—not like a heap [σωρός], however, but like a syllable,—the syllable is not its elements [στοιχεῖα], “ba” is not the same as “b” and “a”, nor is flesh fire and earth; for when they are dissolved the wholes, i.e., the flesh and the syllable, no longer exist, but the elements of the syllable exist, and so do fire and earth.[17] The syllable, then, is something—not only its elements (the vowel and the consonant) but also something else [ἕτερόν τι], and the flesh is not only fire and earth or the hot and the cold, but also something else. Since, then, that something must be either an element or composed of elements [ἐκ στοιχείων εἶναι], (1) **if it is an element the same argument will again apply**; for flesh will consist of this and fire and earth and something still further, **so that the process will go on to infinity**; while (2) **if it is a compound**, clearly it will be a compound not of one but of many (or else it will itself be that one),[18] so that again in this case we can use the **same argument** as in the case of flesh or of the syllable. But it would seem that this is something, and not an element, and that is the *cause* [αἴτιον] which makes *this* thing flesh and *that* a syllable. And similarly in all other cases. And this **(p.109)** is the *substance* [οὐσία] of each thing; for this is the primary cause of its being; and since, while some things are not substances, as many as are substances are formed naturally and by nature, their substance would seem to be this nature [φύσις], which is not an element but a principle [ἀρχή]. An *element* is that into which a thing is divided and which is present in it as matter [ὕλη]; e.g. “a” and “b” are the elements of the syllable.
>
> (*Met*. Z.17, 1041b11–33; Ross translation; his italics, my boldface)

Without attempting to do justice to all the intricacies of this rich and difficult passage, I want for now simply to comment on the role the Aristotelian regress plays for Harte's conception of Platonic wholes; she reads it as in essence

preventing us from taking structure to be yet another *part* of the whole, i.e., as a decisive argument against the "wholes as *composed* of structure" model:

> To say that a whole is more than the sum of its parts, on any ordinary understanding of the phrase "more than", is to say that a whole has something extra in addition to its parts (or indeed to the sum of its parts). Is this something extra a *part*? It had better not be, for the familiar reason that, if it is, then all that we have is another sum of parts (the original ones plus the something extra). So, either we should concede that a whole is, after all, the sum of its parts—and if it is this one, why not the original one? or regress threatens: the whole is more than this new sum also. (To my knowledge, the first person to formulate this argument explicitly was Aristotle . . .)
>
> (Harte 2002, p. 11; my italics)[19]

But notice that Aristotle does not actually argue in the cited passage that a regress results in itself from taking the "something extra" (which, in Harte's terminology, turns out to be *structure*) to be a *part*: rather, a regress threatens, in his view, if the "something extra" in question is *of the same ontological kind* as the other components which make up a genuinely unified whole, be they mereologically basic (i.e., elements) or mereologically complex (i.e., compounds of . . . compounds that are themselves composed of elements).[20] Thus, the point of Aristotle's regress argument is to argue that genuinely unified wholes must not only be mereologically complex but also *ontologically complex*, in that they consist of entities which belong to distinct ontological categories. The two distinct types of entities that go into a genuinely unified whole are here identified by Aristotle as (i) *elements* (στοιχεῖα), which are later in the same passage aligned with *matter* (ὕλη); and (ii) *cause* (αἴτιον), *principle* (ἀρχή), *nature* (φύσις) and *substance* (οὐσία), which are concepts normally associated jointly with *form* (εἶδος), though Aristotle does not explicitly mention form in the passage under discussion.[21]

(p.110) Harte's reading of Aristotle's regress argument thus turns on reading "element" as synonymous with "part".[22] And while Z.17 itself does not explicitly legislate on the question of whether form and matter are themselves *part* of the compound, a reading which takes "part" to be intersubstitutable with "element" in fact creates unnecessary tensions with what Aristotle says elsewhere, as the following passage from *Met*. Δ.25 (his fourth notion of "part") illustrates:[23]

> Those into which the whole is divided, or of which it consists—"the whole" meaning either the form or that which has the form; e.g. of the bronze sphere or of the bronze cube both the bronze—i.e. the matter in which the form is—and the characteristic angle are *parts* [μέρος].
>
> (*Met*. Δ.25, 1023b19–22; Ross translation; my italics)[24]

(p.111) This passage, somewhat obscurely, makes the point that both matter (the bronze) and form (the characteristic angle) are *part* of the compound (the bronze sphere or cube). And while Aristotle speaks less often explicitly of the form as being itself part of the compound than he speaks of the matter as being part of the compound, both of these commitments can fairly be regarded as official Aristotelian doctrine. (We will return to these issues in more detail in the next chapter.)

I conclude, then, that the Aristotelian regress does not present convincing evidence against the "wholes as *composed* of structure" model. It does, of course, raise the difficult question of how the unity of a whole *is* to be explained on a model which takes the "something extra", the *source* of the unity of the whole, as itself a component of the whole, alongside the remaining, non-structural components: certainly, the mere recognition of a particular kind of ontological complexity within a genuinely unified whole by itself does not yet solve the mystery of *why* it is that these entities of distinct ontological types (in Aristotle's case, form and matter) can come together to produce a single genuinely unified thing. But the existence of this *further* question does not in itself show that the "wholes as *composed* of structure" model must be abandoned in the face of the Aristotelian regress. Certainly, Aristotle himself did not interpret his own regress argument in that fashion, since he does take both form and matter to be part of the compound. Rather, he seems to have thought that his distinction between "elements" and "principles" solves the regress and that other aspects of his metaphysics would speak to the question surrounding the unity of wholes. Given the disadvantages of the "wholes as *identical* to structures" model noted above, we should therefore stick with composition over identity, despite the regress, and deal with the problem of unity as best as we can. After all, not even the proponent of the "wholes as *identical* to structures" model can completely escape the problem of unity, if he is willing to allow, as seems plausible, that the structural component may itself exhibit mereological complexity: for the problem of unity arises for anyone who recognizes genuinely unified wholes that are composed of many parts, even when both the whole and the parts in question are structural.[25]

(p.112) §V.4.2.2 Parts as Structure-Laden

(v) *Priority of Wholes over Parts*. I turn now to the final remaining feature of Harte's account of Platonic wholes that has yet to be discussed, the *priority* of wholes over parts. As pointed out above, Harte takes wholes to be, in some sense (whose precise nature is left unspecified), *prior* to and more *basic* in Plato's ontology than their parts; parts are, as she puts it, "structure-laden", in that their existence and identity is in some way dependent on the wholes of which they are part. Harte takes this feature of Platonic wholes to be closely tied to the thesis that wholes *are* structures, which has been the subject of the preceding section. The priority of wholes over parts is of course highly reminiscent of Aristotle's *Homonymy Principle*, according to which a severed

hand (say) is a hand “in name alone”;[26] a modern-day version of the priority of wholes over parts can be found, for example, in Fine (1994).

Harte's thesis that parts, for Plato, are structure-laden is somewhat difficult to evaluate in detail. First, on the whole, the direct textual evidence in favor of Plato's endorsement of the structure-laden nature of parts (as, for example, in the **(p.113)** passage concerning “unblended disasters” from *Phlb*. 64d9–e3 quoted above) is not as overwhelming as that which supports the other aspects of Harte's reading; it is, for example, nowhere nearly as unequivocal as the textual evidence we find in Aristotle in favor of his endorsement of the Homonymy Principle.[27] Moreover, as Harte herself freely admits in Chapter 5 of her book, more work would need to be done to spell out the precise content of the *dependency* claim which forms the core of the thesis that wholes are prior to parts and that parts are structure-laden.

In the absence of evidence to the contrary, and in order to have a more or less concrete thesis before us whose plausibility can be evaluated, I will construe the priority of wholes over parts as what in the language of contemporary metaphysics would amount to the following *de re* modal claim, though there may be more to the dependency at issue than what is captured by this modal claim:

> Priority of Wholes over Parts:
> Objects that are part of a whole are *essentially* part of a whole.[28]

This thesis is intended to be read as the reverse of what is known as *mereological essentialism*, the position associated in contemporary metaphysics most prominently with Roderick Chisholm (e.g., Chisholm 1973, 1975, 1976):

> Mereological Essentialism:
> Wholes have their parts essentially.

According to mereological essentialism, one and the same whole cannot survive gaining or losing any of its parts. According to the priority of wholes over parts, on the other hand, the reverse situation holds, i.e., to use some odd English:

> Reverse Mereological Essentialism:

(p.114) Reverse mereological essentialism (RME) asserts that one and the same part cannot survive gaining or losing its whole, so to speak, i.e., the whole of which it is part. In other words, according to this thesis, no single object could survive, for example, *becoming* a part of a whole of which it is not already part or *ceasing* to be part of a whole of which it is part; any such change would involve the coming-into-existence and going-out-of-existence of numerically distinct, qualitatively similar objects.

RME is, on the face of it, a strange claim. Consider, for example, a factory which manufactures what we would normally describe as “car parts”, i.e., engines and their components, wheels, bodies, chassis, and so on. According to RME, we could, I suppose, continue to *talk* the way we ordinarily do, but when we are strict about what we *mean* by what we say, we would have to admit that, for

example, the things we have been calling “carburetors”, while they are still inside the factory or on the shelf in the auto-parts store, never themselves become part of any functioning car engine; for, in light of RME, installation amounts to the destruction of one object and the creation of a numerically distinct, qualitatively similar object: a transformation happens at the precise moment at which the installation of the thing we (loosely) call “carburetor” is successfully completed, and at that moment a new thing has come into existence, which we continue to call by the same name. Car mechanics, on this picture, turn out to be very powerful creatures indeed; or, alternatively, the creation and destruction of objects is a much less involved affair than we ordinarily suppose.[29]

Harte tries to motivate RME in Chapter 4 of her book by means of several examples, which are simultaneously intended to provide support for the “wholes as *identical* to structures” model. Harte's first example is a dinner party (the complex whole) and its guests (the parts); her second example is that of a simple **(p.115)** sentence (the complex whole), which is “woven together” out of a name and a verb (the parts). (As noted earlier, the second example is also one of Plato's favorite ways of illustrating the prominence of structure in his analysis of wholes, especially in the *Sophist*.) In both cases, we are to think of the *structure* in question as the sort of entity which provides “slots” that can only be filled by entities of a certain kind: in the case of the dinner party, Harte conceives of the structure as the *seating arrangement*, in this case of the “alternate-by-gender” type, which specifies “slots” for men and women, respectively (viz., with every man having a woman to his left and his right, and every woman having a man to her left and her right); in the case of the second example, on the other hand, we are to think of the sentence as a kind of “syntactic space” of a particular kind, which specifies a “slot” for a name and a verb, respectively, as combined in a particular way so as to give rise to an *assertion*. In both cases, the structures in question are conceptualized not as universals, i.e., as repeatable types, but as particulars, i.e., as tokens of the type in question. Since Harte is operating under the “wholes as *identical* to structures” model, she is tempted to *identify* the complex whole in question with the structure, i.e., the dinner party with the seating arrangement, and the sentence with the syntactic space.

Harte's identification of wholes with structures raises numerous puzzling issues. For one thing, the persistence conditions assigned to dinner parties seem not to reflect those we ordinarily assign to them: for, given her picture, one wonders, for example, what happens when one of the guests rises from his or her chair within the seating arrangement or whether the party only starts after everyone has sat down at the table and ends immediately after everyone has risen. Moreover, Harte's conception also runs into difficulties reminiscent of the Pythagorization of the bathwater discussed earlier: for we wonder, for example, how the guests or expressions could really be *part* of the dinner party or the sentence in question, when these complex wholes are already fully exhausted by

the structure that specifies the slots, i.e., by the seating arrangement and the syntactic space, respectively. For intuitively, the guests and expressions are what *fills* the “slots” in question, but the structures are merely what *specifies* the “slots”. Given that the “wholes as *identical* to structures” model does not make room for a genuine structure/content *dichotomy* or for a cross-kind application of the composition relation, whose relata are the complex whole, its structure and its content, there seems to be nothing left to contribute for those elements in the analysis whose job it is to play the role of content, viz., the guests and the expressions.

But let's focus instead on the consequences of applying the RME model to the parts in question. The result, in the first case, is a Geachian universe populated not only by “surmen”, “heralds”, “passengers”, but also by such entities as “guests”. Guests, on this conception, are entities which cannot survive separation from the particular dinner party of which they are part; they are related to *persons* (or *human beings*) in the following way: when a person enters its “slot” in the **(p.116)** seating arrangement, a guest comes into existence; and when a person exits its “slot” in the seating arrangement, a guest goes out of existence. What this case illustrates, then, is that the RME model can only be plausibly applied, if at all, to cases in which we are also willing to ascribe to an entity essential membership in a *kind*, but not to cases in which we are dealing with what intuitively are *phase-sortals*, i.e., concepts that denote mere *phases* in the life of a kind of thing. But RME requires more than the ascription of essential kind-membership to the part in question; it also requires a particular way of spelling out the *content* of this ascription: for example, in order for RME to take hold in our earlier example involving the hand, we must be willing to say of the object that is attached to the human body not only that it is *essentially* a hand; we must also be willing to accept that part of what it means to be a hand is that hands cannot occur in isolation from living bodies. (The example of living bodies and their parts may well be the kind of case that is most favorable to the RME model.)

Similarly, in the case of sentences and their constituents, RME also has the unattractive consequence of ruling out the possibility of one and the same name or verb occurring in structures of different kinds: for example, the expression “Socrates”, which occupies the name-“slot” in the particular name/verb/assertion structure, “Socrates is flying”, according to RME, could not be numerically identical to the expression “Socrates” which occupies the name-“slot” in the particular name/verb/question structure, “Is Socrates flying?”.[30] For numerous reasons, this extremely fine-grained approach to the individuation of expressions is not an attractive way to proceed: for the most plausible explanation for a competent speaker's ability to form and interpret a potential *infinity* of sentences is that these complex expressions are built up *compositionally* from a *finite* number of pre-existing building-blocks. The RME model, among other things, would make it very difficult to explain how speakers

with finite cognitive powers can be so successful in acquiring language and in using language to communicate with one another.

Regardless of what we may think of the *plausibility* of RME, however, what is most important for present purposes is that RME is in any case *independent* of what we may term the structure-laden nature of *wholes* (as contrasted with the structure-laden nature of their *parts*), i.e., feature (iv) of Plato's analysis, which was the subject of the previous section. For regardless of whether this latter claim is to be understood according to the "wholes as *composed* of structure" **(p.117)** model or according to the "wholes as *identical* to structures" model, on both models feature (iv) concerns a property of *wholes*, and as it stands not even one that is explicitly *modal*, though presumably both models may certainly choose to take this property to be *essential* to wholes. Both the "wholes as *composed* of structure" model and the "wholes as *identical* to structures" model hold that wholes have the property of being *structured*: on the first model, this comes to the claim that structure is among the *components* of a whole; on the second model, it amounts to the claim that wholes themselves *are* structures. But neither of these claims in and of themselves says anything about the essential properties of the *parts* of a whole. In contrast, the point of RME is precisely to identify a *de re* modal property of the *parts* of a whole.[31]

§V.4.2.3 A Final Word on Content

I want to close with a few remarks on the nature of *content*, which has received less attention in the foregoing discussion than structure, the other member of the structure/content dichotomy. Given Plato's characterization of the "unlimited" in the *Philebus* and the *Timaeus*' "receptacle", there is certainly some temptation to conceive of content as something that is in itself completely devoid of structure. The "wholes as *identical* to structures" model, in combination with the priority of wholes over parts just considered, also lends itself to this reading. For if wholes are identified with structures, then insofar as they can be thought of as having parts at all, these parts are most straightforwardly conceived of as being themselves structures, i.e., sub-structures within a larger structure. (Recall our earlier complaint that the "wholes as *identical* to structures" model does not make room for a genuine structure/content *distinction*.) And insofar as parts are thought of as structure-laden, i.e., as unable to survive separation from the wholes of which they are part, then whatever predates the creation of a complex whole can never be numerically identical to anything that is part of a newly created whole (e.g., by filling one of the "slots" specified by the structure or by **(p.118)** fulfilling whatever other role an object must fulfil in order to figure within a structure as one of its parts). The combination of these commitments certainly creates considerable pressure to identify, if only in thought, something which, at least on the most basic level, underlies the imposition of structure and is therefore itself completely devoid of structure; a phenomenon of this kind of course could be described in language, if at all, then only with the greatest of difficulty and

primarily in negative terms. (We are reminded here once again of Aristotle's "prime matter".)[32]

But this conception makes content out to be needlessly murky. It also gives rise to an analogue of Putnam's famous objection to the "cookie-cutter" model (Putnam 1987, p. 19), the model subscribed to, in Putnam's view, by the metaphysical Realist (with a capital "R"), who believes that there is a single world, viz., the "dough", which can be sliced into "pieces" in different ways: Putnam recommends that we ask philosophers who subscribe to this view, "What are the 'parts' of this dough?"; when we do so, we will see that the "cookie-cutter" model founders on this question, since no "neutral" description can be found of what the "parts" of the "dough" might be, i.e., one which doesn't already presuppose some particular conceptual scheme. Similarly, we may challenge the proponent of "structureless content" to tell us what the "parts" of his "structureless content" might be, and to do so without already invoking some particular way of *structuring* the content in question.

Instead of the needlessly murky conception of content as structureless, I propose that we think of content simply as a domain of complex wholes that are already themselves structured: when a new whole is created, it is created out of pre-existing wholes, each of which is already structured; and it is created by structuring these pre-existing wholes in some new way. (Of course, if composition is to be restricted, then only *some* new ways of structuring pre-existing wholes **(p.119)** will result in the creation of a new object.) This conception of content as already structured is certainly what is suggested by the great majority of examples of complex wholes we have considered in the preceding sections: e.g., sentences that are created by combining names and verbs; musical chords and melodies that are created by combining sounds of different pitches; the bathwater that is created by mixing hot and cold water; health, heat waves and thunderstorms that are created by mixing different contrary qualities, such as hot and cold or moist and dry. It is also the conception of content that is more easily squared with the *Timaeus*' *first* creation story, in which the four elements play the role of content; given what we know from the second creation story, the elements themselves are already structured, and they further consist of entities that are also already structured (the triangles and cubes).

The need for a kind of content that is itself completely devoid of structure only arises when we entertain the possibility of a *first* level of composition, i.e., a level of composition which consists of entities that are not themselves composed of anything more basic. For if these completely basic, ground-level constituents were to be thought of as themselves structured, then of course whatever would fulfil the role of content in that case could not be of the nature of complex wholes. But whether there is a *first* level of composition is not a question that *philosophy* is qualified to answer. And if it turns out that there is such a level,

then the structure/content dichotomy simply breaks down at that point. For the very fact that what we are dealing with is a *first* level of composition, i.e., one whose constituents are completely *basic*, means that we cannot think of these entities as being *composed* of anything: since they are basic, no further analysis of them into anything more basic can be given. Any attempt to apply the structure/content dichotomy, which was specifically designed for the analysis of complex wholes, to these basic entities will result in the sort of predicament that lead to Plato's “receptacle” and Aristotle's “prime matter”.

§V.5 Concluding Remarks

The focus of this chapter has been Plato's structure-based analysis of wholes, in its illuminating reconstruction by Verity Harte, especially Harte (2002). Harte discerns in Plato's mereological writings both a *negative* and a *positive undercurrent*. In the former, Plato evaluates and eventually rejects alternative models of composition, particularly a Lewis-style Composition-as-Identity model associated with the commitment-shy Eleatic philosophers; Plato ultimately finds this model to be untenable because it does not make room for wholes that are genuinely *one* despite their *many* parts. In the positive undercurrent of his mereological writings, Plato is concerned to develop his own substantive stance towards what we would now describe as Peter van Inwagen's “Special Composition Question”, the question “Under what conditions do *many* objects **(p.120)** compose *one* object?”, and to come out against David Lewis' “Axiom of Unrestricted Composition”, according to which *any* plurality of objects, no matter how disparate and gerrymandered, composes a further object, their mereological sum. In contrast to Lewis' deflationary conception, Platonic wholes, on Harte's reading, have the following full-blooded features: they are (i) genuinely *unified*; (ii) *ontologically loaded*; (iii) governed by a *restricted* notion of composition; (iv) comprised of the two components of *structure* and *content*; (v) ontologically *prior* to their parts; (vi) *normative* and *teleological* in nature; as well as (vii) inherently *intelligible* and the *proper objects of science*.

A contemporary metaphysician who is simply looking for the *right* analysis of ordinary material objects would presumably want to disassociate himself at least from some of the features of Plato's theory, most notably those in (vi) and (vii). For, with respect to these features, Plato's conception of wholes is, for modern tastes, tied too closely to a centralized teleology. As a result of this association, Platonic wholes turn out to have exclusively positive normative and teleological features and are suffused with intelligibility which guarantees them a place in some rigorous discipline.

In contrast, Plato's emphatically *unified* approach to wholes, as compared to the paradoxical “many-one” entities of the Composition-as-Identity model, is surely an attractive feature of his account and one that any credible contemporary approach would want to incorporate in some fashion. We found in Plato the *beginnings* of a fully general answer to van Inwagen's “Special Composition

Question", "Under what conditions do *many* objects compose *one* object?": he develops, sometimes with great care, particular *cases* in which composition takes place and provides a rich and suggestive metaphorical vocabulary by means of which to *describe* the composition relation in these particular cases; he thereby draws attention to domains, such as language and music, in which the dominance of structure is hardly deniable. On the whole, however, we found Plato to be less concerned than Aristotle will turn out to be with the project of how to account, in completely general terms, for the source of unity within a mereologically complex object.

Moreover, Plato's *restricted*, *ontologically loaded* and *structure-based* conception of composition is fully in line with the conclusions reached in Chapters II through IV, as a result of our discussion of Lewis and Fine. However, Plato's *structure/content dichotomy*, I argue, must be read in a particular way; and this is where my account diverges most from Harte's reading. First, despite the Aristotelian regress in *Met*. Z.17, wholes cannot be *identified* with structures; rather, structure is merely one of the *components* of a whole. The "wholes as *identical* to structures" model makes no room for a genuine structure/content *distinction* and puts the composition relation out of business, except insofar as structures themselves are viewed as mereologically complex. Given Plato's deflationary construal of structure in purely mathematical terms, the "wholes as *identical* to structures" model also results in an overly Pythagorean universe. **(p. 121)** Secondly, Plato's structure-laden conception of *wholes* should be divorced from the counterintuitive thesis that the *parts* of a whole are structure-laden as well, since these two theses are in any case independent of one another. Finally, the "wholes as *identical* to structures" model, in combination with the "priority" of wholes over parts, leads to a needlessly murky conception of content, which ought to be abandoned in favor of a conception of content as already structured.

Overall, despite some misgivings with respect to the details, Plato's structure-based analysis of wholes provides an attractive blueprint for a contemporary theory of composition. Most of the features of his account that we can no longer accept are connected to Plato's centralized teleology; once we divorce ourselves from these elements, however, we find in Plato a theory which, in broad strokes, is basically correct: wholes are genuinely *unified*; *ontologically loaded*; governed by a *restricted* notion of composition; and comprised of the two components of *structure* and *content*. And while I have in the foregoing discussion indicated some departures from Harte's reading of Plato, my understanding of Plato's mereology, as well as my own thoughts on parthood and composition, have been deeply shaped by my study of Harte's groundbreaking work in this area: without her tremendous success in extracting from Plato's texts an analysis of parts and wholes that is evaluable from the standpoint of a contemporary metaphysician, most of us would have simply missed the surprisingly compelling model of composition that can be found scattered across some of the most opaque

contexts in Plato's writings and that is often hidden beneath metaphorical or mythological terms.[33]

Notes:

(1) The material in the current chapter constitutes a more detailed development of the points made in a very condensed fashion in my review of Harte (2002) (see Koslicki 2004b).

(2) The specific texts Harte groups into the negative mereological undercurrent are as follows. (i) *Theaetetus* 203–206: a passage that occurs in the third part of the *Theaetetus*, while considering the definition of "knowledge" as true judgment with an account ("λόγος"), during Socrates' "Dream-Argument"; it concerns the relative unknowability or knowability of "elements" over "complexes". (ii) *Parmenides*: Harte identifies four different mereological puzzles that mark out the negative undercurrent in the *Parmenides*; they occur in the initial conversation between Socrates and Zeno (*Prm*. 129b ff), in the "Dilemma of Participation" (*Prm*. 131a–c), as well as in the First and Second Deduction (*Prm*. 137c–142a, 142b–155e). (iii) *Sophist*: the relevant passages occur in the discussion of the "Monists" (viz., those philosophers who hold, like Parmenides and Zeno, that what is is one) at *Sph*. 244b6–245e2.

(3) The specific texts belonging to Harte's positive mereological undercurrent are as follows. (i) *Parmenides*: passages from the Second, Third, Fourth and Seventh Deductions (especially *Prm*. 146b2–5, 157b7–c8 and 158b5–c7). (ii) *Sophist*: the discussion of the "Late Learners" (*Sph*. 251a5 ff). (iii) *Philebus*: the discussions of "limit", "unlimited" and "mixture", which dominate large sections of the dialogue. (iv) *Timaeus*: the first creation story, which concerns the creation of the body of the cosmos (beginning at *Tim*. 29d7), and the second creation story, which concerns the creation of the four elements (beginning at *Tim*. 53a7).

(4) Unless otherwise noted, the translations in what follows are Harte's; the italics mine.

(5) Recall in this context that Fine also likens his principles of variable embodiments to "containers", which actively pick out their manifestations at each time at which the variable embodiment in question exists.

(6) Plato, in the *Timaeus*, views the cosmos as an ensouled, living being that is created by a teleologically driven divine demiurge out of geometrical proportions and the "receptacle"; the body of the cosmos consists of the four elements, as arranged in certain geometrical proportions. The four elements themselves are viewed as non-basic: they consist of triangles and cubes, as arranged in certain geometrical proportions (fire consists of pyramids; air consists of octahedrons; water consists of icosahedrons; and earth consists of

cubes); the possibility is left open that the triangles and cubes themselves may be non-basic as well.

(7) At least on one reading of the passage; but one might also read the “unblended disasters” in the manner of (c).

(8) Plato's “unblended disasters” are of course reminiscent of Aristotle's mere heaps (on which more below); the latter might also be read either as “marginal” wholes of some kind, as in (b), or in the manner of “bare pluralities”, as in (c).

(9) Plato's situation here is interestingly similar to that of Kit Fine, as described in Chapter IV. For Fine also endorses an exceedingly liberal conception of what it means to be the structural component of some whole. Fine's “principles of variable embodiment” are the analogue in his system to Plato's number, measure, ratio and proportion; they are likened to *functions* from times to objects and no restrictions whatsoever are placed on *which* function-like operations make suitable “principles of variable embodiment”. This feature of Fine's system, combined with his extremely tolerant existence principle, according to which *any* such principle determines an object, yields the superabundant ontology to which we objected earlier. The lesson we learn from both of these writers is that a theory of composition which assigns a central role to structure cannot construe the structural component in purely mathematical terms (or in analogy with a mathematical object of some kind); as we shall see below, Aristotle seems to have incorporated this lesson into his treatment of parts and wholes.

(10) For reasons that will become apparent below, Harte stresses the role of the “receptacle” as content more than that of the four elements; since the four elements are themselves already structured, they don't fit as easily as the “receptacle” into her conception of content as something that is in itself completely unstructured.

(11) As mentioned above, Harte reads the *Timaeus*’ “receptacle” simply as *space*; the geometrical proportions by means of which the demiurge arranges the “receptacle” as *configurations of space*. This reading of the *Timaeus* seems to commit Plato to generation of something out of nothing: for how could space by itself be configured geometrically in such a way as to give rise to *material* bodies, if there is nothing which *fills* the space? Harte considers this worry (p. 258) and declares it to be confused; I disagree. Harte's reading of the *Timaeus* may be connected to her adoption of the “wholes as *identical* to structures” model, which, as I argue in what follows, does not make room for a genuine distinction between content and structure. An alternative reading, which does not follow the “wholes as *identical* to structures” model, would, in the case of the *Timaeus*, allow for a genuine distinction between the content that is being configured in the manner of these geometrical proportions, i.e., what *fills* the

space, and the ways in which that which fills the space is being configured (structure).

(12) Note that English actually recommends two different uses of the term “structure”, in connection with the two formulations of Harte's thesis: in connection with the first conception (“wholes as *composed* of structure”), the term is most naturally used as a *mass* noun, i.e., as a noun which has a “bare” or unquantified singular occurrence, without the indefinite article; in connection with the second conception (“wholes as *identical* to structures”), on the other hand, it is most naturally used as a *count* noun, in a quantified singular or plural occurrence accompanied in the singular by the indefinite article, as in “*A whole=a* structure”, the plural version of which is “Wholes = structures”.

(13) Whether or not structure is *detachable* from the whole is of course a different issue and the “wholes as *composed* of structure” model need not be read in a way which makes the structural component merely a *contingent* ingredient of a whole, i.e., one which one and same whole could gain or lose without thereby ceasing to exist. Rather, the “wholes as *composed* of structure” model may very well take structure to be an *essential* ingredient of the whole, as for example both Fine and Aristotle do (see below, for a defense of this reading of Aristotle). If, on the other hand, “detachable” does not mean “contingent”, then I am not sure quite what to make of its meaning. Perhaps, Harte is instead, in the passage just quoted, launching an implicit *criticism* against the “wholes as *composed* of structures” model, viz., that the opposing conception of wholes has an easier time *explaining* the modal status of structure with respect to the whole; this is of course correct (given the necessity of identity), but the disadvantages of the “wholes as *identical* to structures” model nevertheless outweigh this particular advantage.

(14) Of course, one possibility, which would resolve the tension between her two readings of Plato is that Harte is simply using the term “structure” in two distinct ways. And there is in fact some indication that this is precisely what is going on in Harte's text, when she speaks, for example, of the “structure *of* a structure”. She explicitly discusses the potential danger of equivocation that lies in this apparent double use of the term “structure” (e.g., Harte 2002, p. 166) and decides that this practice is not harmful to her thesis that wholes *are* structures. For the reasons indicated above, however, I disagree. Of course, Harte is free to introduce another use of the term “structure” according to which wholes *are* structures, but then *these* structures are merely the result of combining the *other* structures (i.e., in the sense of what is mathematically expressible) with content. “Structure” in this new use is then merely another term for “whole”, and I don't see what is to be gained from giving wholes another name: certainly we don't thereby understand the relation between a whole and its parts any better, since structure, in the new sense, would feature as the *analysandum* in Plato's analysis of wholes, while structure, in the first sense of what is

mathematically expressible, would be that (in conjunction with content) in terms of which wholes are *to be explained*.

(15) For an expanded version of my reading of the regress argument in *Met.* Z. 17, see Koslicki (2006b).

(16) "*T*ὸ πᾶν", literally "the all", is also the term used by Plato and Aristotle to distinguish "mere" mereological sums or aggregates from genuine wholes (ὅλον); τὸ πᾶν is for example used in Aristotle's entry on "whole" in *Met*. Δ.26 for what Ross there translates as "totals", i.e., entities such as water which in Aristotle's view lack the requisite degree of unity to be considered genuine wholes. But in the current context, Aristotle is clearly using the term "τὸ πᾶν" in a broader sense, to include genuinely unified wholes as well, and is primarily interested in differentiating such wholes from mere heaps (σωρός). We will return to these distinctions below, in connection with Aristotle's entries under "part" and "whole" in his "Philosophical Lexicon" in *Met*. Δ.

(17) Notice that Aristotle is here appealing to a Leibniz's Law-style argument for the numerical distinctness of wholes and their elements. Aristotle's reasoning is that because a whole and its elements do not share all of the same characteristics (in this case, persistence conditions), they cannot be numerically identical (reading "the same", in this context, as denoting the relation we would now call "numerical identity"); for the elements can survive "dissolution", while the whole cannot.

(18) I read Aristotle here as appealing to the Weak Supplementation Principle, according to which an object which has a proper part must have at least another proper part disjoint from (i.e., not overlapping or sharing parts with) the first. Similarly, a compound, Aristotle says, cannot be composed of just one element, since the object in question would then be identical to its sole element (reading "being that one" again as denoting in this context the relation contemporary metaphysicians call "numerical identity").

(19) Harte goes on to refer to the passage from *Met*. Z.17 just cited.

(20) The second case, as Aristotle points out, of course reduces to the first: for suppose we are dealing with a compound that is composed of further compounds; we can then ask about each of these smaller compounds what *they* are in turn composed of, etc., until we get to a compound which is composed, not of further compounds, but of elements, in which case we now have something that has the shape of the first case.

(21) Aristotle, in this passage, seems to take heaps, as contrasted with genuinely unified wholes, to be entities which are mereologically complex but ontologically simple, in that they consist merely of elements, but lack a principle that "ties together" the elements into a genuinely unified whole. Wholes, on the other

hand, in Z.17 are taken to be exclusively objects that are unified under a single form. In light of what Aristotle says in the texts to be examined in Chapter VI, however, we will have occasion to construe both the term “whole” and the term “heap” differently below: the term “whole” will be seen to apply more broadly to objects that are mereologically complex and unified under *some* principle of unity (though not necessarily form); the term “heap” will be taken to apply to objects that are mereologically complex and not unified under a single form (though possibly under a different, weaker principle of unity). The details of Aristotle's conception of wholes will be the subject of the next chapter; what matters for present purposes is only whether the regress argument in Z.17 must be read as having any impact on the “wholes as *composed* of structure” model.

(22) This feature of her reading comes out quite clearly, for example, in the following passage from Chapter 3 of Harte's book; after quoting a section from Aristotle's text, she says:

> This “something else” is not a further *part* of the whole (cf. 1041b25–7), but it is rather its nature (φύσις) and principle (ἀρχή) (1041b30–1); and this, although Aristotle does not here explicitly use the term, is form (εἶδος).
>
> (Harte 2002, p. 133; my italics)

Although she doesn't say this explicitly in her book, her dissertation suggests that Harte may have had in mind a reading of Aristotle which holds that form is a part of the compound according to a sense of parthood (“formal part”) distinct from that which applies to matter (“material part”). This reading leaves open the possibility that “element” in Z.17 may be taken as synonymous with “part”, as long as we are careful to understand “part” in this context as meaning material part; moreover, on this reading, form would still come out as a proper part of the compound according to its own separate sense of “part” (“formal part”). Although I acknowledge that Aristotle often talks as if he means by “part” material part, I take him in these contexts merely to be using a convenient short-hand; in what follows, I offer both textual and conceptual reasons against distinguishing a “formal” from a “material” sense of parthood.

(23) In fact, given Aristotle's endorsement of the Weak Supplementation Principle, as documented above, he does not have much of a choice in this matter, if he wants to avoid inconsistency: if he were to view only the matter as part of the compound and not the form as well, not only would the relation between the compound and form have been left mysterious (see my earlier comment in Chapter IV along the same lines concerning Fine's principles of variable embodiment); we would also have a violation of the Weak Supplementation Principle, viz., a compound which is composed of only one thing as part, viz., matter.

(24) I have here emended Ross' translation by rendering his “the *elements* into which the whole is divided”, in the first sentence of the cited passage, simply as “*those* into which the whole is divided”, which, though less elegant in English than Ross' rendition, is closer to the text. The text does not contain an occurrence of the word “στοιχεῖα”, with which we have just been concerned in the context of *Met*. Z.17; rather, it contains merely a neuter plural relative pronoun, i.e., something closer to the more literal “*those* into which the whole is divided”; “elements” is inserted by Ross simply to fill out the meaning of the pronoun and is thus best construed in a neutral non-technical fashion. Since Ross' insertion of “the elements” might be confusing in the context of the present discussion, as we have also been concerned with the technical use of the term, I have found it best simply to omit it from the passage at issue.

(25) My characterization of Aristotle's loyalties as lying unambiguously with the “wholes as *composed* of structure” model is of course over-simplified; the actual situation is in fact more messy. (Note, for example, that Aristotle offers *two* characterizations of “whole” in the passage from Δ.25 cited above: (i) whole as form; and (ii) whole as the compound of matter and form.) For one thing, he does, as we shall see below, take some wholes to *be* structures, e.g., when he speaks of form in the sense of “definition” or “formula of the essence”, which he usually takes to be a composite entity, composed of genus and differentiae: definitions thus seem to present us with an example of a complex whole which is itself structural in nature; however, even in this case, Aristotle appears to be driven by his general views on composition to identify a component within the definition that is aligned with *matter* (the genus) and a component that is aligned with *form* (the differentiae), or at least we see him going through great contortions in his attempt to come up with a satisfying account of the apparently composite, yet unified, nature of form, when understood in the manner of definition. (More on this below.) Moreover, in many contexts in the *Metaphysics* (especially Book Z), Aristotle seems to come close to an outright *identification* of substance with form (at least substance in the *relative* sense of the term, according to which we speak of the substance *of* a thing). However, this conception of substance as form does not entail that wholes in general are now to be identified with form; for, in those contexts in which Aristotle is tempted to privilege form in this manner, he tends to be more concerned with deciding what sort of entity deserves *primary substance* status, and not so much with the task of providing an analysis of composition (in fact, even in these contexts, he seems to take for granted his analysis of composition in terms of matter and form); thus, even when he gravitates, with some hedging, towards *identifying*, say, Socrates with Socrates' form (the soul) (as he does, e.g., at *Met*. Z.11, 1037a5 ff), Aristotle would not for that reason do away with *compounds* of matter and form (e.g., as another way of looking at Socrates); these compounds of matter and form still have their rightful place within his ontology, and along with them so does his analysis of composition in terms of matter and form, only such

compounds would now rank lower than form alone in the hierarchy of substances.

(26) See, for example, *De Anima* II.1, 412b10 ff, where his examples are an “eye” that cannot see and an “axe” that cannot cut. Very roughly, we can construe Aristotle's principle in the following fashion: to apply the term “hand” both to an object that *is* attached to a living body and to one that is *not* attached to a living body is to use the term “hand” *homonymously*, or in two different senses. It is a consequence of this thesis that an object that is part of a living body cannot persist through a change which would involve its separation from this living body (see note 28 for a slightly weaker reading): for example, in a circumstance which we would ordinarily describe as “Joe accidentally cut off his hand at noon”, the object (hand, in one sense) that is attached to Joe's body until noon is not numerically identical to the isolated object (hand, in a distinct sense) that is not part of any living body; in fact, the object which is attached to Joe's body until noon *ceases* to exist at noon and a qualitatively similar, numerically distinct object *comes into* existence in the region of space-time next to Joe's feet. (The generation, however, is not *ex nihilo*, following Aristotle's belief that every change must have an underlying subject; the subject underlying this particular change are the fire, earth, air and water which keep a *potential* presence within Joe's hand while it existed and which now take on a potential presence within the new, unattached object that has just come into existence.) Both of the objects in question are called “hand”, but not in the same sense of “hand”, according to the Homonymy Principle. Thus, Aristotle's principle seems to involve at least in part the sort of *de re* modal claim I am about to propose in the main text. But Aristotle would also want to add to the *de re* modal claim a further thesis concerning the connections between the different senses of the homonymous term: for the sense of “hand” that is applied to the unattached object, in his view, is in some way *parasitic* on the sense of “hand” that is applied to the attached object; only the latter is *really* a hand, in the full-fledged sense of “hand”, the other object is called “hand” only in an *extended* sense of “hand”.

(27) Of course, the lack of direct textual evidence may be overruled by a sufficiently persuasive *inferential* case, based on Plato's other theoretical commitments, in favor of his adherence to an analogue of Aristotle's Homonymy Principle.

(28) Actually, this claim has been left deliberately vague in at least the following way: it is left unspecified whether it is essential to a given object that it be part of the *particular* whole of which it is a part, or simply part of a whole of the same (or some related) *kind*. (Think, for example, of an organ-transplant case in which we may be tempted to say that my heart survives by becoming part of the body of another human being.) For reasons of simplicity, I will adopt the first, stronger

reading in what follows; but my arguments will not turn on the differences in strength between these readings.

(29) This approach to the relation between parts and wholes, among other things, has serious consequences for Plato's distinction between structure and content (more on this below in the next section). For, given the truth of RME, content could not survive the imposition of structure, since what exists prior to the creation of a complex whole is never numerically identical to anything that is part of a newly created whole. It is for this reason, I believe, in combination with the "wholes as *identical* to structures" model, that we often find Harte speaking of Platonic content as something completely *unstructured* or *undifferentiated*, as she puts it in the case of the *Timaeus*' "receptacle" or the Phileban "unlimited". Content, in this sense, is not something that we could actually find in the world; it is only something which, in Harte's view, we can *conceive of* in thought (as is the case with Aristotle's "prime matter"). This way of thinking of content may lend itself to the extreme case of the *Timaeus*' "receptacle", but it is less obviously compatible, for example, with the role of the four elements as content and the possibility of intertransformations between them, which seems to be an important feature of Plato's second creation story; for, in that case, it does sound as though one and the same entity—a particular triangle, say—is at one point part of a fiery pyramid and at another point part of an airy octahedron. In fact, as in the case of Aristotle's analysis of change as always involving an underlying subject, it seems that it is the very persistence of these objects (the triangles) which makes these intertransformations between elements intelligible. The RME-model would also prevent us from saying, for example, in the case of the bathwater, that the very same quantities of water which existed prior to the mixing have survived this process and now compose the bathwater.

(30) The stronger reading of RME has the even more counterintuitive consequence that one and the same name, "Socrates", could not be a part of two distinct complex wholes, even when these wholes are of the same kind, e.g., "Socrates is sitting" and "Socrates is flying".

(31) In the beginning of Chapter 4 of her book, Harte raises another consideration which is supposed to speak in favor of both the RME model and the "wholes as *identical* to structures" model, which she takes to go hand in hand with one another, and against the competing "wholes as *composed* of structures" model. This is her "special pleading" objection, according to which the "wholes as *composed* of structures" model has a more difficult time explaining why it is the case that composition is *restricted*. If structure is merely a *component* of a whole, so Harte reasons, then why isn't it the case that basically any plurality of objects instantiate some structural property and therefore compose a whole? In contrast, she holds that the alternative approach, which *identifies* wholes with structures, can appeal to the fact that the question of which wholes (i.e., structures) there are in the world is a separate question

from the question of how the parts of a whole are related to the whole they compose: the former is a question for the ontologist to solve, the latter is one for which the mereologist is responsible. However, I fail to see the contrast between the two approaches with respect to this issue. Why is it not equally open to the proponent of the “wholes as *composed* of structures” model to let the ontologist (as contrasted with the mereologist) answer the question of which entities the world contains that are suited to the role of being the structural component of some complex whole? As I have mentioned earlier, it seems that some approaches have a more difficult time than others in explaining why composition is not unrestricted; for example, Plato's and Kit Fine's deflationary, mathematical conception of structure opens up a greater need to impose external restrictions on composition than Aristotle's more full-grained conception, as we will see in the next chapter. But these differences do not differentiate between the “wholes as *composed* of structures” model, on the one hand, and the “wholes as *identical* to structures” model (combined with RME), on the other.

(32) Harte often sounds like this when she speaks of content, as she does, for example, in the following passage which concerns the Phileban “unlimited”, in connection with the example of musical sound:

> Unlimitedness, on my reading, is a property of an *undifferentiated* phenomenon such as sound, the content of a domain of science, conceived in the absence of structure. Limit is the structure that, applied to this content, makes up a distinct domain of science from this undifferentiated phenomenon.
>
> (Harte 2002, pp. 204–5; my italics)

But what does it mean for a phenomenon to be *“undifferentiated”*? And how could anything that is “undifferentiated” really be identified as *sound*, as distinct from, say, light? Whatever actually exists in space-time must exhibit certain characteristics (i.e., temperature, velocity, mass, and so on) to a certain degree; and the range of magnitudes (e.g., wavelength, frequency, etc.) exhibited by sound are different in characteristic ways from those exhibited, say, by light. Even at the level of *thought*, it is not clear how something could be *conceived of* as sound, unless it is conceived of as exhibiting certain magnitudes to a certain degree. Moreover, it seems that, in principle, *any* sound could be incorporated into a musical piece (modulo practical considerations relating to our perceptual apparatus and aesthetic sensibilities); thus, sound in itself is not plausibly thought of as falling into different kinds, musical and non-musical.

(33) One feature of Plato's account I did not discuss in this chapter is his characterization of wholes as “that from which no part is lacking” or “that from which nothing is absent” (see, e.g., *Tht*. 205a4–7 and *Parm*. 137c7–8). This characterization of wholes, along with the association between “part” and “measure”, will be seen to figure quite prominently in Aristotle's account.