THE LIKENESS REGRESS

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PLATO'S PARMENIDES 132C12–133A7

By

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Abstract

Since Forms and particulars are separate, Plato is left with the task of describing the way in which they are related. One possible way of construing this relation is to suppose that particulars resemble Forms. Socrates proposes this and is refuted by Parmenides in the so-called Likeness Regress (*Parmenides* 132c12–133a7).

This work comprises both an exposition and an analysis of the Likeness Regress. In the exposition, I work out the argument-form of the Likeness Regress in second-order logic (and later, show that first-order logic is sufficient). This symbolisation provides a baseline for the balance of the exposition, which has two focusses: first, I define what it means for particulars to resemble Forms, with the help of D. M. Armstrong's account of resemblance in *A Theory of Universals*; second, I demonstrate that the infinite regress argument of the Likeness Regress is indeed vicious, with the help of T. Roy's theory of regress arguments.

In the analysis, I proceed with the premiss that an asymmetrical account of the resemblance relation would allow Socrates to escape Parmenides' refutation. I examine various accounts of asymmetrical resemblance (including those accounts put forward by R. E. Allen, P. T. Geach and G. Vlastos), but reject these in favour of my own account. My account of asymmetrical resemblance is based on understanding the resemblance relation as a function that is not self-inverse. Finally, I argue that the Likeness Regress need not be considered definitive, since we find in the ontology of the *Timaeus* a conception of resemblance that fits my account of asymmetrical resemblance.

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To my parents.

Without their support, this would not have been possible;
without their love, this would not be meaningful.

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Introduction

καὶ τοῦτο οὔτε μὴ παύσηταί
ποτε οὔτε ἤρξατο νῦν, ἀλλ' ἔστι
τὸ τοιοῦτον, ὡς ἐμοὶ φαίνεται,
τῶν λόγων αὐτῶν ἀθάνατόν τι
καὶ ἀγήρων πάθος ἐν ἡμῖν.

Plato, *Phlb.* 15d6–8

Helen and Penelope are both beautiful. We know from this statement, without being supplied with any additional information, that Helen and Penelope have something in common. But difficulties arise when we try to be more specific about what it is they hold in common, or how they do so. If either Helen or Penelope possesses beauty as one may possess a physical object, it would not be possible for them to have beauty in common: the beauty possessed by Helen would be different from the beauty possessed by Penelope. We might as well give the beauty of Helen and the beauty of Penelope different names, and consider them to be unrelated. So we may rule out the possibility of their possessing beauty as one may possess a physical object. But if beauty is not possessed in this way, we return to our initial question: what is this beauty that Helen and Penelope have in common, and how do they possess it?

Socrates gives his "safe answer" to this question in the course of describing his δεύτερον πλοῦς ("second sailing," *Phd.* 100d4–8):[1] the particular "is made beautiful in virtue of nothing other than the presence of or the share in Beauty, or in whatever way [the particular] is attached [to the Form]." This assertion is not restricted to that which is beautiful, but is generalisable to an unspecified extent (cf. "I speak thus for all," *Phd.* 100c4–6).

[1]References to the *Parmenides*, the *Timaeus* and the *Laws* follow the line numbers in the Budé editions; all others follow the line numbers in the first *OCT* editions.

Socrates' answer provides a solution to our question by distinguishing between the character of beauty, which both Helen and Penelope have, and that Form in virtue of which Helen and Penelope have this character. Helen and Penelope both have the same character of beauty not by possessing beauty as one may possess a physical object, but by being related in some way to Beauty. But this solution replaces our initial question with one that is almost as virulent: what is the Form, and how are particulars related to it? In what follows, we shall focus on the second part of this question, and attempt to determine how particulars are related to Forms.

Participation

The names Socrates uses to describe the relation between Forms and particulars are μετέχειν (e.g., *Phd.* 100c5, *Smp.* 211b3, *R.* 402d3) and μεταλαμβάνειν (e.g., *Prm.* 129a3) — verbs that we translate as "to participate" when employed in a technical sense. The non-technical sense of these verbs typically indicates a relation of sharing. For example, μεταλαμβάνει τὸ πέμπτον μέρος τῶν ψήφων means that one shares in a fifth part (accusative) of the votes (partitive genitive) (cf. *Ap.* 36a7–b2; Smyth 1956, §§1343–4). Thus, it seems reasonable to suppose that the technical sense of these words is parasitic upon the non-technical sense: Penelope has a share of Beauty. But it is doubtful that this does much to elucidate the nature of participation.

Particulars, and the Forms in which they participate, make appearances in dialogues such as the *Symposium* (cf. 211c1–212a8), the *Republic* (cf. 435b1–2, 507b2–8) and the *Phaedrus* (cf. 249d4–250d8); but there is no sustained investigation in these dialogues of what participation entails. This is not to say that there are no indications about the nature of participation: suggestions are made and hints are dropped. But Socrates always stops short of a direct explanation. The need for such an explanation becomes increasingly urgent as the rôle of the Forms expands: in the *Phaedo,* Socrates invokes the Forms to explain why particulars have the characters they do; but by the time we get to the *Symposium,* the *Republic* and the *Phaedrus,* Forms are responsible for a good deal more. For example, Forms motivate our desire for goodness and happiness (*Smp.* 205d1–3), they allow for the possibility of knowledge (*R.* 507b2–8) and they move us from opinion to wisdom (*Phdr.* 250b2–c6). Particulars are often intimately involved in

the performance of these functions; and so the question of how particulars are related to Forms is an important one.

Only in the *Parmenides* do we find the nature of participation being questioned openly. In this dialogue, we find a young Socrates solving one of Zeno's paradoxes, the conclusion of which is that a given particular is without qualification both like and unlike (127e1–4). Part of Socrates' solution to this paradox is that particulars have the characters of likeness and unlikeness to the degree and in the respect that they participate in the Like and the Unlike (129a2–6). But this sets the stage for a series of five puzzles concerning Forms and the nature of participation.

Participation in the *Parmenides*

Socrates proposes and defends three accounts of participation in the first part of the *Parmenides*. All three accounts founder at the hands of Parmenides. The first account is that participation is for the Form to be present in the particular — either the whole Form, or a part of the Form (131a6–8). This account proceeds from a literal interpretation of μετέχειν and μεταλαμβάνειν: if Theaetetus gets a share of Socrates' pie, it is natural to ask whether Theaetetus' share comprises the whole pie or a part of the pie. Similarly, if a particular shares in the Form, we may ask whether the particular receives the whole Form or a part of the Form.

The possibilities envisioned by the first account become the horns of a dilemma for Socrates. If the whole Form is present in the particular, then Socrates is unable to explain how more than one particular may participate in the Form at one and the same time, without the Form being separate from itself (131a9–b2).[2] It is as if Socrates and Theaetetus were to share out the aforementioned pie, with the whole of the pie going to Socrates, and the whole of the pie going to Theaetetus, at one and the same time.

[2]What it means for the Form to be separate from itself is not immediately clear. The word for "separation" (χωρίς) is used to describe the relation between Forms and particulars (130b1–3), between Forms and the characters of particulars (130b3–5), between Forms and other Forms (129d7–e4) and between particulars and other particulars (131b1 2). Although we cannot assume that χωρίς means the same thing in each case, there seems to be a basic sense that applies to all of these cases (Allen 1997, 113): "to be separate implies, minimally, not to be the same." Thus, to say that the Form is separate from itself may mean that the Form is not the same as itself, which of course is contradictory.

But this is impossible. In contrast, if a part of the Form is present in the particular, the particular is no longer related to the Form, but to a part of the Form (131c5–e3). But since each part of the Form is different from the whole Form, a part of the Form cannot do the same work as the whole Form; and so parts of Forms being present in particulars leads to a series of paradoxes (131c12–e3). With Socrates running into problems whether the whole Form is present in the particular, or whether a part of the Form is present in the particular, he is neatly impaled on the horns of the dilemma.

In an attempt to avoid the conclusion that the Form is separate from itself should it be present as a whole in many separate particulars, Socrates proposes a second account of participation. This proposal comes in the form of an analogy to the day. The suggestion is that just as one and the same day may be present in many separate places at once, so too one and the same Form may be present in many separate places at once. This turns on reading ἡμέρα to mean an extent of time; and if sympathetically interpreted, we must admit that the same day may be in many places at once. That is. if Socrates spends the day at the market, and Theaetetus spends the day at the harbour, the same extent of time passes in both places, but the extent of time is not thereby separate from itself.

Parmenides does not refute Socrates' account directly, but rather, with some clever sleight of hand, forces Socrates to withdraw his account. There is some debate over whether a sympathetic interpretation of ἡμέρα should be allowed in the context (cf. Dorter 1994, 29; Panagiotou 1987, 18–9). But even if we do allow such an interpretation and accept that Forms are present in many particulars as the day is present in many places, it is unclear what else this analogy tells us about participation. Perhaps if Parmenides had been more sympathetic to Socrates' position, we might have found out.

The third account of participation supposes that Forms are paradigms, and participation is for particulars to resemble those paradigms (132d3–5). If this account holds, many particulars could participate in one and the same Form without the Form being separate from itself, because the particular would simply resemble the Form in some way. By analogy, many pictures may be drawn of one and the same bed, and many houses may be constructed from the same blueprint, and neither the bed nor the blueprint would be separate from itself.

This time, Parmenides refutes Socrates' position by means of an infinite regress. Here is a simplified account of the argument. Assuming that an object has the character it does in virtue of resembling a Form, Penelope

has the character of beauty in virtue of resembling Beauty. But if Penelope resembles Beauty in being beautiful, Beauty must also be beautiful. Hence, we need to explain the beauty of Beauty; and we may do this by supposing that there is some Form, call it Beauty_2, that Beauty resembles because it is beautiful. But this means Beauty_2 must be beautiful, which requires a beautiful Beauty_3, and a beautiful Beauty_3 requires a beautiful Beauty_4, and so on. In the face of just such an infinite series of Forms, Socrates folds.

Participation as Resemblance

Our project is to examine this third account of participation, as it appears in the Likeness Regress[3] of the *Parmenides*, with a view to determining whether Socrates has a workable thesis. There are two reasons why this project is attractive. The first is that the third account of participation runs much deeper than the *Parmenides.* Even before the word for "Form" acquires any detectable technical meaning, Socrates asks Euthyphro to tell him the form (τήν ἰδέαν) of piety so that he may use it as a paradigm (παραδείγματι) for determining which actions are pious, and which actions are impious (*Euthphr.* 6e3–6). In the *Phaedo,* we are told that the recollection of Forms is occasioned by things that resemble the Forms. As an example of this, Socrates points out that our recollection of the Equal may be brought about by our perception of equal sticks. Such sticks are only equal in a deficient way; but the deficient equality we perceive resembles the Equal enough to prompt a recollection of the Equal (74a1–75a3). In the *Phaedrus,* the soul recalls Beauty[4] by seeing in particulars an image of the Form (249d5–250b1); and Socrates tells us that with Forms other than Beauty, most souls are unable to see past the resemblances to that which is resembled (250b1–5).[5] And in the *Timaeus,* we find Forms described

[3]This is the name given to *Parmenides* 132e6–133a7 by Allen (1996, 182), and to 132c12–133a7 by Gill (1996, 42). I borrow the name, and use it in accordance with Gill's convention.

[4]Accepting Hackforth's extension of the Greek sentence to bring out the meaning that is implicit (1952, 93 n. 1).

[5]The words translated here as "resemblances" and "that which is resembled" are εἰκόνας and εἰκασθέντος respectively. They have the same root as the word Socrates uses in the *Parmenides* when he says that participation is "nothing other than to resemble (εἰκασθῆναι)" the Form (132d2–5).

as paradigms (49a1), and particulars described as imitations (49a1) and as that which has the same name as and resembles Forms (52a5).

It could be argued that particulars are said to resemble Forms as early as the *Euthyphro*, as late as the *Timaeus*,[6] and in many important dialogues in between. It is difficult to suppose that Plato did not take the concerns raised by the Likeness Regress seriously, given the frequency with which particulars are supposed to resemble Forms, and the prominence the resemblance relation has in the metaphysics of the middle-period dialogues (at the very least, he liked talking about it). Thus, it is clear that the third account of participation occupies an important place both with respect to the puzzles in the first part of the *Parmenides,* and with respect to the metaphysical picture we get in the dialogues.

The second reason that our project is attractive is that there is a good deal of room for work to be done on the Likeness Regress. Compared to the amount of ink that has been fruitfully spilt over the Largeness Regress,[7] the passage which we shall be examining has garnered little independent attention. This is not to say that it has been ignored — far from it. It has been implicated in a number of scholarly controversies over the course of the past century, most notably the debate surrounding the suppressed premisses of the Third Man Argument,[8] the debate over whether the *Timaeus* was written before or after the *Parmenides*, and questions concerning the status of the Forms in the late dialogues. But in these debates, our passage tends to be a bit player, with proposed interpretations coloured by the concerns of more wide-ranging arguments. Seldom is the Likeness Regress discussed in any depth on its own, with regard to its unique premisses and logical structure.

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[6]Or, if we are persuaded by the version of events that puts the *Parmenides* after the *Timaeus*, we should rather say "... as early as the *Euthyphro*, as late as the *Parmenides* ..." The debate surrounding the dating of the *Timaeus* will not concern us, but our study will have something of substance to offer, since one of the core arguments for dating the *Timaeus* before or after the *Parmenides* depends on the sustainability of the thesis of the Likeness Regress.

[7]This name is given to *Parmenides* 132a1–b3 by Allen (1997, 152), and also by Gill (1996, 29). It is often called the Third Man Argument, because of a tendency to associate it closely with an argument (or group of arguments, cf. Sayer 1996, 78) referred to by Aristotle (*Metaphysics* A, 990b17; Z 1039a2) and perhaps stated by Aristotle in *On Ideas* (as preserved by Alexander of Aphrodisias in his *Commentary on the Metaphysics of Aristotle,* 84.21–85.3).

[8]This debate is nicely surveyed by Cohen (1999, 276–81).

One might raise the question of whether there is any point in examining participation in the Likeness Regress, since the explanation offered by Socrates has already been refuted. But that a refutation takes place is separate from the question of whether a refutation ought to have taken place. A good deal has been written about the function of drama in the dialogues, and how we should go about reading the works of a philosopher who never speaks with his own voice (except perhaps in some of the *Epistles*). We shall not rehearse these arguments here; but one implication of the dramatic form is that we cannot infer from the refutation of a position that Plato himself believed the position was untrue. When the young Socrates is refuted by Parmenides, we should not take this to mean that Socrates' suggestions are without merit; it remains an open question whether Socrates could have made certain admissions that would allow him to avoid the problems Parmenides creates for him. Indeed, it seems plausible that Plato intended the refutation we find in the Likeness Regress to be the beginning of a discussion about particulars resembling Forms, not the end. Two questions immediately suggest themselves: the first is what has gone wrong for Socrates; and the second is what may be done to remedy the situation.

Objectives and Structure

Finding the answers to these two questions is our primary concern. To discover what has gone wrong for Socrates, we undertake a detailed exposition of the Likeness Regress. The exposition comprises the first two chapters of our inquiry. In the first chapter, we provide a translation and a close reading of the passage. Part of our close reading will involve symbolising the argument in second-order logic; but we will also be sensitive to those aspects of the argument that are not captured by the second-order argument-form. In particular, a detailed treatment of resemblance relations and of the regress portion of the argument is necessary, and we provide this in the second chapter.

In the exposition, we argue that Parmenides' refutation of Socrates is valid, given Socrates' admissions and a certain understanding of resemblance and infinite regress arguments. Since our goal is to see how the argument works, we do not concern ourselves with whether Socrates should or should not have made certain admissions. Instead, we make every effort

to read the argument sympathetically: sympathetic to Parmenides, because we want to see why he argues the way he does; and in a sense even sympathetic to Socrates, because we want to see why he accepts Parmenides' refutation.

To discover what may be done to remedy Socrates' situation, we undertake an analysis of resemblance. This analysis comprises the last two chapters of our inquiry. In the third chapter, we attempt to work out an account of resemblance that saves Socrates from Parmenides' refutation. This process involves looking at the contributions of other commentators, and thence developing our own account of resemblance. We argue that our account does in fact shield Socrates from Parmenides' attack; but since so few details about resemblance are given in the Likeness Regress, we have no basis for supposing that the Socrates of the *Parmenides* would accept or reject this account.

But there is a dialogue which treats resemblance in much more detail: the *Timaeus.* Hence, the fourth chapter contains an abbreviated exposition and analysis of certain parts of Timaeus' speech, and from this we extract an account of resemblance. We then argue that the account of resemblance we find in the *Timaeus* fits the new account of resemblance that we developed in the third chapter. Thus, although Socrates is refuted in his encounter with Parmenides, Timaeus' ontology seemingly has the resources to deal with the difficulties posed by Parmenides. And so, we should not consider the refutation of Socrates as definitive, but rather as raising the possibility of understanding the resemblance between particulars and Forms in a new way.

Part I

Exposition

Chapter 1

The Likeness Regress

The Likeness Regress is a *reductio ad absurdum.* It begins with Socrates' assertion that "Forms stand as patterns in nature" (132d1–2), and ends with an infinite regress that forces Socrates to abandon his thesis (132e6–133a7). Our investigation of the Likeness Regress proper begins with the logical structure of the argument, and there are two fundamental features of our approach. The first is to translate the argument into a symbolic argument-form, with a view to drawing out the ambiguities of language in the argument and applying a fixed interpretation. The choice of a standard second-order logic for this task is easy to justify: it will allow us to discern the basic structure of the argument. But the abstractions of such a logic make it too crude to capture every nuance of the argument. And so, the second feature of our approach is to make sure we do not lose sight of the detailed argument presented in the dialogue, even as we move to study its argument-form. Here is a translation of the passage (132c12–133a7):

Socrates: Yet Parmenides, this is quite clear to me:[1] these c12

[1]Socrates introduces his thesis with the phrase ἀλλ' ...μάλιστα ἔμοιγε καταφαίνεται (c12), which is difficult to render, because the sense of καταφαίνεται is not immediately clear. According to the *LSJ*, the verb means either to seem or to be clear; but at stake is the conviction with which Socrates expresses himself. Does Socrates mean to guard his thesis by introducing it in a conciliatory way, or is he certain that he has a winning proposal on his hands?

The passages cited in the *LSJ* offer little help in deciding between these two possibilities: at *Philebus* 16c5–6, the verb is used in a parenthetical phrase, and so is correctly rendered as "it seems." But our present phrase is not parenthetical. The other three citations (*Charmides* 172c5–6; *Laws* 712e5–6, 811d2–5) make sense when translated either way. Further complicating matters is the appearance of γε. When γε is attached

Forms stand as patterns in nature, and the others resemble them and are likenesses; and this participation that the others come to have in the Forms is nothing other than to resemble them.

Parmenides: Well, if something resembles the Form, is it possible for that Form not to be like that which resembles [it], insofar as it is like to it? Or is there some device by which that which is like is not like that which is like [it]? d6

Socrates: There is not. d9

Parmenides: But is it not entirely necessary for that which is like to participate in one and the same Form as that which is like? d10

Socrates: It is necessary. e2

Parmenides: And will not that, in virtue of participation in which like things are like, be the Form itself? e3

Socrates: Certainly. e5

Parmenides: Then it is not possible for something to be like the Form, or for the Form to be like another; otherwise, alongside the Form there will always appear another Form. And should that be like anything, another again, and never will a new Form cease to arise always, if the Form comes to be like what participates in it. e6

Socrates: What you say is most true. a4

Parmenides: Consequently, the others do not participate in the Forms by likeness, but it is necessary to seek out some other way by which they participate. a5

Socrates: So it seems. a7

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to a pronoun, it may be either limitive ("to me at least"), which suggests guarding, or determinative ("for my part"), which suggests that the speaker is deliberately taking ownership of the phrase.

I think there is reasonable support for translating the phrase as I have above. First, Denniston points out that γε in close proximity to ἀλλά serves to "define more sharply the new idea introduced" (1954, 119). There is an example in the *Gorgias* (456a5–6), where καταφαίνεται and ἔμοιγε are used together, and it is clear that γε is determinative in force. Second, Plato often uses μάλιστα to intensify the adversative force of ἀλλά (cf. *Theaetetus* 167d7, *Parmenides* 135e3, *Laws* 668a3). Thus, as part of emphasising the contrast between the current thesis and earlier (failed) theses – which is suggested by the γε and the μάλιστα — I make Socrates express himself with confidence.

A cursory analysis of the passage reveals that it falls into four parts: the first is Socrates' thesis (132c12–d5); the second is the three additional premisses that Parmenides extracts from Socrates (d6–e5); the third is the regress itself (e6–a4); and the fourth part is the statement of the result (133a5–7). Just as in the Dilemma, where we find Parmenides impugning not the existence of Forms but the possibility of participation, here too Parmenides' conclusion focusses on the inadequacy of Socrates' account of participation, and not the claim that Forms are paradigms.[2] We shall now look at these parts in detail.

1.1 Socrates' Thesis (132c12–d5)

1.1.1 First Sentence (132d1–3)

If our interpretation of ἀλλ' ...μάλιστα ἔμοιγε καταφαίνεται (132d1) is correct, and Socrates is indeed expressing himself with confidence, then it is quite striking. He displays none of the tentativeness that he does when he makes other assertions in the first part of the *Parmenides.* For example, when he suggests that Forms are thoughts, he couches the proposal in mollifying terms (132b4–5): "may it not be that each of the Forms is a thought of these things (μὴ τῶν εἰδῶν ἕκαστον ᾖ τούτων νόημα)." The negation together with the verb in the subjunctive mood underline his irresoluteness. Similarly, when the Day Analogy appears amidst the Dilemma of Participation, it is not strongly stated (131b3): "at least if [the Form] were like the day (οἷον εἰ ἡμέρα εἴη)" Perhaps we would not expect Socrates to be too firm when he offers that the Form is like the day, because he is doing so as a defensive move, but it still stands in marked contrast to what we find in the Likeness Regress. Furthermore, by the time of the Likeness Regress Socrates has seen two of his accounts of participation refuted (as well as having run into other difficulties related to the Forms), and so the thesis of the Likeness Regress, too, is made under a certain amount of pressure.

[2]One might think that we can infer participation merely from the statement that Forms are patterns; but nothing prevents a pattern from existing, or from being a pattern when no particular is patterned on it (although perhaps not in the fullest sense of "pattern," if being a pattern means to be taken as a pattern for something).

We also notice at once that the description of patterns and particulars in Socrates' thesis reinforces the model of participation found in the middle dialogues.[3] Just in case we doubted the connexions between the Likeness Regress and the middle dialogues, Socrates gives us a clear sign. The Forms stand (ἑστάναι) in nature, which is in contrast to the particulars that resemble (ἐοικέναι) the Forms — the former verb implies stability, whereas the latter implies a relationship of dependence on that which is stable. This sort of relation immediately puts us in mind of the theory of Forms in the middle dialogues.

Once we get past Socrates' enthusiasm for his thesis, and the verbs he chooses to express his thesis, we are left with an assertion about Forms, and an assertion about "the others." With respect to Forms, we have quite a daunting phrase: Forms "stand as patterns in nature (ὥσπερ παραδείγματα ἑστάναι ἐν τῇ φύσει)" (132d2). With the exception of Proclus, commentators generally take this to be equivalent to the claim that Forms are patterns (ignoring "stands" and "in nature"); but Socrates could have said this quite briefly (i.e., "the Forms are paradigms" — τὰ εἴδη παραδείγματα), and so it is necessary to engage in a little speculation to understand why he said more. First, Proclus rightly points out that the ὥσπερ is used to limit the claim that follows; but he goes on to say that Socrates is distinguishing between patterns in the sensible world which are "sterile and lifeless," and patterns in the intelligible world[4] which are "active and image-generative" (§910). If we follow Proclus, Socrates ends up with a quite a strong claim: Forms are not merely patterns, but active patterns. But if the Forms do not act like patterns at all, and are otherworldly and unique in power (as they would have to be if they are "active patterns"), the explanatory power of Socrates' account of participation becomes highly suspect. Thus, it seems more likely that Socrates is limiting his claim for a more mundane reason, and the adverb ὥσπερ is simply intended to signal that Socrates is going to be vague about the details concerning the way in which Forms are patterns. As we shall see, Socrates is anything but clear about what this assertion entails.

[3]Cf. Proclus (§906; trans. G. Morrow): "What else does he mean by that than that he is allotting to the Forms motionless and unchangeable essence, and to the things that come to existence in dependence on them an essence which is tossed about in the realm of generation?" We need not be as enthusiastic as Proclus to take his point.

[4]The phrases "sensible world" and "intelligible world" are introduced here in accordance with Proclus' usage.

Proclus' second point is that the term φύσις (nature) is being used as a technical term, and it indicates the intelligible world (§908). So for Proclus, this is coördinate with the claim that the Forms are active patterns in the changeless intelligible world. He cites two passages as evidence (§908): the first, from the *Philebus,* where Socrates says that in the nature of Zeus is the soul of a king (30d1–2); the second, from the *Timaeus,* where Timaeus says that the nature of living being is eternal (37d3). In the first case, Zeus is said to have a nature, which surely means that the nature in question (along with Zeus himself) is eternal; and in the second case, the nature in question is described as being eternal. While a survey of the uses of φύσις is not necessary for our purposes, it is interesting to note that the various uses in the *Parmenides* contradict Proclus' evidence. The most striking example of this occurs when the instant in time — the very opposite of eternity — is said to have a nature that is strange (156d6). And just as surely as Zeus has a nature in the *Philebus,* mortal humans have a nature in the *Parmenides* (135a5). And so it seems doubtful that φύσις is being used in a technical way to indicate eternality.

Perhaps a better way to look at "in nature (ἐν τῇ φύσει)" (132d2) is to find in it a contrast to "in the soul (ἐν ψυχαῖς)"[5] (132b6). In the previous puzzle, we have witnessed Socrates suggesting that Forms are thoughts that exist in souls; and in the Likeness Regress, he wants to make it clear that Forms are not patterns in the mind — and so he adds the qualification ἐν τῇ φύσει. Nevertheless, this reading still does not give a clear indication as to what is meant by φύσει nor why Socrates would not simply say that Forms are patterns that are not in the mind. But let us proceed under the assumption that Socrates is indicating a contrast, because the Forms he is speaking of in the Likeness Regress are clearly not in the mind, and because there may be no clear answer to our question, short of a formal analysis of the various uses of φύσις (and perhaps not even then).

Now that we have looked at Socrates' initial statement about Forms, we may turn to what he says about "the others" — fortunately our path here is somewhat simpler. Socrates says that "the others resemble them and are likenesses" (132d2–3). The antecedent of "them (τούτοις)" is undoubtedly "these Forms (τὰ ... εἴδη ταύτα)" from the previous clause (d1), since he defines participation in the next sentence as the others resembling

[5]This extends Gill's suggestion, who glosses "in nature" as "outside the mind" (1996, 42).

the Forms (d3–5). What is of particular interest to us, and will be a key to understanding Parmenides' motives in the argument, is the reference of "the others (τὰ ἄλλα)" (d2). It is clear that Socrates is meaning that which participates in the Forms; but it is not immediately apparent what restrictions he is thinking of when he refers to τὰ ἄλλα. In particular, is he thinking only of sensible particulars (so that his definition of participation will be in terms of sensible particulars participating in Forms), or does he include Forms as well (so that his definition will be in terms of sensible particulars or Forms participating in Forms)?

There is no indication that Socrates is thinking of Forms as well as sensible particulars; indeed, there is evidence to the contrary. First, there appears to be a connexion between the phrase τὰ ἄλλα and particulars, established earlier in the dialogue. When the relation between Forms and participants is initially mentioned, particulars alone are meant: Parmenides says "does it not seem to you that there is some Form, in which these others here (τάδε τὰ ἄλλα) participate" (130e5). We can imagine Parmenides pointing to physical objects nearby when he uses the emphatic demonstrative pronoun τάδε. And Socrates has recently described that which participates in the Forms as "that which we call many" (129a3) and then as "the many" (131a10) — which must refer to particulars as opposed to Forms, since particulars rather than Forms are many. Second, one of the primary uses of ἄλλος is to indicate a contrast with what came before,[6] in this case the τὰ ... εἰδη ταῦτα just mentioned.

Third, the possibility of Forms participating in Forms has been raised in the Largeness Regress, but it was partially responsible for the regress. It would be strange for Socrates to revisit this thesis in the Likeness Regress, given where it led him the first time. Fourth, if our interpretation above is correct, the verb applied to Forms implies stability, whereas the verb applied to τὰ ἄλλα does not. Thus, it is likely that Forms, which are described elsewhere as unchangeable (*Phd.* 78d1–3; 8–9) and eternal (*Tim.* 29b5–7), are excluded from τὰ ἄλλα. And so, τὰ ἄλλα refers to sensible particulars.[7]

Let us take stock of what we have so far. The first sentence of Socrates'

[6]Cf. Denniston's account of ἀλλά as an etymological cousin of ἄλλος (1954, 1).

[7]S. Panagiotou reaches the same conclusion regarding the reference of τὰ ἄλλα, as part of a much more detailed argument regarding the interpretation of the Largeness Regress (1971, 255-9, esp. 258). See my discussion of the first premiss (below), for the shift from sensible particulars to participants in general (via the τι at 132d6).

thesis consists of two parts: an initial statement about Forms, and an initial statement about particulars. In this way, Socrates asserts the existence of Forms and particulars, and he describes Forms standing as patterns in nature, and particulars resembling Forms and being likenesses of Forms. Symbolically, we may express this as follows:[8]

(1.a) There are Forms, and there are particulars. Forms stand as patterns in nature, and particulars resemble Forms and are likenesses of Forms.

(1.b) There exists at least two Forms (x and y), and two particulars (u and v). The Forms are patterns in nature, and the particulars resemble Forms and are likenesses of Forms.

(1.s) $(\exists x_f)(\exists y_f)(\exists u_p)(\exists v_p)(x \neq y \ \& \ u \neq v \ \& \ Px \ \& \ Py \ \& \ Rux \ \& \ Rvy \ \& \ Lux \ \& \ Lvy)$[9]

We use a restrictive signature[10] for the predicate "P" in order to reflect the fact that to "stand as patterns in nature" is not something that could be applied to particulars.[11] As for the signatures for "R" and "L", it is

[8]The multiple-step procedure I use to symbolise English sentences parallels the procedure Forbes uses in *Modern Logic* (1994).

[9]We are going to employ a sorted symbolic language, in order to restrict the types of objects (i.e., Forms or particulars) over which a given variable or predicate can range. We shall accomplish this by loosely following the system presented in *Logical Options* (Bell, DeVidi, and Solomon 2001, 115–21). For our purposes, we shall define three domains — F, P and D — with the objects in F being Forms, and the objects in P being particulars, and D being the union of F and P. Each quantified variable has a lower-case subscript, indicating the domain over which the variable ranges (this is a small modification of the system presented in *Logical Options*, for the variable ranges there are keyed to the name of the variable itself (2001, 115); for convenience, we use subscripts). Then we assign a signature (2001, 117) to each predicate whenever we want the extension of the predicate to be mapped onto one, but not both, of the domains. For example, in the symbolisations we have given, the one-place predicate letter "P_" stands in for "_ stands as a pattern in nature." The signature of "P" is <F>, which means that the extension of "P" is limited to those objects in F.

The dictionary and the signatures for the predicate-letters are as follows: P_: _ stands as a pattern in nature (signature: <F>); R_,_: _ resembles _ (signature: <D,D>); L_,_: _ is a likeness of _ (signature: <D,D>). The signature of the non-identity predicate is, as should be expected, <D,D>.

[10]We shall use the phrase "restrictive signature" to mean that the signature of a predicate letter requires at least one of the terms of the predicate to range over F or P exclusively.

[11]This is not to say that "being a pattern" is a predicate peculiar to being a Form (for the explanatory power of saying that Forms are patterns comes from the applicability of

unclear at this point whether these predicates have restrictive signatures, but this will become an important issue when we move to a discussion of resemblance.

Aside from the signatures of the predicates, there are a number of interpretive decisions which we have been forced to make in symbolising the first sentence of Socrates' thesis. Socrates refers to Forms and particulars, and while the plural indicates that there are multiple Forms and multiple particulars, it is not clear how many there are of each, or whether there is a limit on the number of Forms and particulars he has in mind. In the symbolisation, we have postulated the existence of at least two Forms, and at least two particulars. It is a limitation of the logical language we are using that we cannot easily postulate the existence of indeterminately many Forms and particulars, and describe the relation between them. Thus, the number of Forms and particulars represented by our symbolisation is somewhat arbitrary and will be revised, if for some reason the argument requires more than two Forms and two particulars.

The other aspect of Socrates' claim that is difficult to symbolise, is the relation between individual Forms and particulars. Socrates does not exclude the possibility that Forms may be related to particulars either asymmetrically, symmetrically or non-symmetrically.[12] That is, while particulars are resemblances and likenesses of Forms, no mention is made about Forms being resemblances or likenesses of particulars. In the absence of any explicit indication as to the nature of the relation, we shall leave open the question of its being asymmetrical, symmetrical or non-symmetrical, and hold in reserve the option of specifying the nature of the relation.

The next interpretive problem is that Socrates does not articulate the specific relations between the particulars that exist and the Forms that exist. In the symbolisation, we have given a sample of the possible relations: the first particular resembles and is a likeness of the first Form; the second particular resembles and is a likeness of the second Form.[13] But it is

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the notion of being a pattern to Forms), but to "stand as patterns in nature" is peculiar to Forms — if our interpretation of ἑστάναι is sound.

[12]That is, either "$(\forall x)(\forall y)(Rxy \rightarrow Ryx)$" (symmetrical), or "$(\forall x)(\forall y)(Rxy \rightarrow \sim Ryx)$" (asymmetrical), or "$(\exists x)(\exists y)(Rxy \ \& \ Ryx) \ \& \ (\exists x)(\exists y)(Rxy \ \& \ \sim Ryx)$" (non-symmetrical, cf. Forbes 1994, 276).

[13]That Socrates assumes relations obtain between Forms and particulars can be seen earlier in the *Parmenides* For example, in his solution to Zeno's paradox, Socrates proposes that particulars have the characters of likeness and unlikeness to the degree and

an open question, at this point, whether this will be sufficient for the argument, whether there are particulars which are not related to the Forms (presumably if there are, they will not be relevant to the argument), and whether there are particulars that are related to multiple Forms or every Form. And so, we should be prepared to expand the premiss to accommodate other possibilities, if it is required by the argument.

Finally, note that the claim that at least two particulars exist, as symbolised by "$(\exists u_p)(\exists v_p)(\ldots u \neq v \ldots)$", is intended to be neutral with respect to the self-subsistence of particulars *vis-à-vis* Forms. In other words, Socrates may be thinking of particulars as existing only insofar as they participate in Forms. or he may be thinking of particulars as existing independently of Forms. But in either case, the symbolisation is merely descriptive: it states that at least two particulars exist, but makes no further claim as to whether they depend on some other object for that existence.

1.1.2 Second Sentence (132d3–5)

The second sentence of Socrates' thesis (d3–5) is his definition of participation: "this participation that the others come to have in the Forms is nothing other than to resemble them." We shall begin our analysis with a few observations about the language in which this claim is expressed. Socrates' solution to Zeno's paradox is articulated in terms of participation (e.g., 129a3, 129a7, 129a8, 129b5). We may trace these words to two different roots: μεταλαμβάνειν and μετέχειν. The primary, non-technical sense of these roots appears to be the same: "to have or get a share of" or "to partake of." It is this sense that allows Parmenides to generate the Dilemma of Participation; for if a particular has or gets a share of a Form, then it is natural to ask what part of the Form a particular gets when it participates in the Form — which leads directly to the dilemma involving parts and wholes.

In our current sentence, the word translated as participation is μέθεξις, which may be traced to μετέχειν. We might expect Socrates to become tangled up again in some version of the Dilemma, since we are again defining a verb of sharing. But Socrates is careful not to allow the primary sense of μετέχειν to give rise to his account of participation — with the result

in the respect that they participate in the Forms of the Like and the Unlike (129a2–6). So we may imagine a like particular participating in the Like, and an unlike particular participating in the Unlike.

that the term acquires and is used in a technical sense, becoming a label to describe the relation of particulars to Forms, regardless of what the content of that relation might be.[14]

The relation of particulars to Forms is phrased with respect to the particulars themselves: particulars resemble (εἰκασθῆναι) the Forms. The use of the passive voice raises a question about the way in which particulars are made like the Forms (which shall be left unanswered for now); but it also alerts us to the fact that Forms are not moving causes in Socrates' conception. If they were, we would expect him to say that Forms make the particular like. And so, we have the claim in the first sentence of Socrates' thesis that particulars resemble Forms and are likenesses of Forms; and the coördinate claim in this sentence, that participation is for particulars to resemble Forms, gives no indication as to the agent by which particulars become like the Forms.

But nor should we expect one. Recall the "safe answer" given by Socrates as part of his δεύτερος πλοῦς: the beautiful particular "is made beautiful in virtue of nothing other than the presence of or the association with the Beautiful, or in whatever way [the particular] is attached [to the Form]. For I do not as yet affirm this confidently, but only that beautiful particulars become beautiful in virtue of the Beautiful itself" (*Phd.* 100d4–8). Here, Socrates not only declines to describe the relation of particulars to Forms in any detail, but also omits any discussion of agency. Thus, it comes as no surprise, given the close connexion between the middle period dialogues and the Likeness Regress, that Socrates is careful to articulate his definition without reference to the moving cause of particulars coming to be like Forms.

The actual account of participation is explicitly in terms of particulars (τοῖς ἄλλοις, d4) coming to resemble Forms; nothing Socrates says implies that Forms participate in Forms. The symbolisation of the account is straightforward second-order logic; being the equation of two predicates, the main connective must be the identity symbol:

[14]One could argue that in coming to be like the Forms, the particular does share in the Form in some respect, and thus there is an etymological connexion between μετέχειν and participation. I agree that there is an etymological connexion between the result of participation and μετέχειν — yet I am not arguing against a connexion between verb and result, but rather against a connexion between verb and account. Since the content of the account is not determined by the verb, then if there is any distinction between the technical uses of μεταλαμβάνειν and μετέχειν, it is not relevant to the Likeness Regress.

(2.a) Participation of particulars in Forms is for particulars to resemble the Forms.

(2.b) Participation of particulars in Forms is identical to particulars resembling Forms.

(2.s) $M = R$[15]

Again, we employ a restrictive signature, this time for "M" — reflecting the fact that Socrates' definition is oriented towards particulars participating in Forms. Also, we hypothesise that "resembling" in the second sentence of Socrates' thesis is intended to pick up the claim in the previous sentence, that particulars resemble Forms — despite the fact that the word used for the former is εἰκασθῆναι (132d4) whereas that used for the latter is ἐοικέναι (d3).

The motivation for this hypothesis is as follows: first, there is a strong etymological connexion between the words, since the origins of εἰκασθῆναι may be traced to εἰκός, which is the neuter participle of ἔοικα. Second, since εἴκω usually appears exclusively in the perfect active, the only closely related verb available to Socrates if he wishes to express resemblance in the aorist passive is εἰκασθῆναι. And so, not only are the two verbs closely related, but common usage requires the shift. Therefore, we should use the same predicate-letter for both verbs ("R"). The signature of "R" remains unchanged (<D,D>), but we should keep in mind that the resemblance that is equivalent to participation is the specific case of resemblance where a particular resembles a Form. This restriction, of course, is forced upon us by the signature of "M," because if the first and second terms of "R" are not a particular and a Form respectively, then "M" in (2) becomes undefined.

1.2 Three Additional Premisses

Parmenides extracts three additional premisses from Socrates (132d6–9, d10–e2 and e3–5), all of which are presumably consistent with some interpretation of Socrates' thesis. These three premisses are the most difficult parts of the Likeness Regress to construe, because they contain a multitude of ambiguities. The difficulties that we shall examine in the first premiss are a function of the brevity and generality with which Parmenides expresses

[15]The dictionary and the signature for the new predicate-letter "M" is as follows: M_,_: _ participates in _ (signature: <P,F>).

his claim, and the tolerance of Greek for assumed direct objects. The primary difficulty in the second and third premisses is an interpretive issue well discussed in the scholarly literature. We shall now examine the additional premisses in turn.

1.2.1 First Premiss (132d6–9)

The first premiss actually consists of two questions, which Socrates answers as if they were one question.[16] Here are the questions:

(i) Well, if something resembles the Form, is it possible for that Form not to be like that which resembles [it], insofar as it is like to it? (d6–7)

(ii) Or is there some device by which that which is like is not like that which is like [it]? (d8)

In the translation of these two questions, I have tried to reproduce the ambiguities of the original. Fortunately, these ambiguities can be resolved when we read the questions slowly. We shall not uncover anything unexpected when discussing these ambiguities, but by examining them we become acutely aware of the degree to which Parmenides is loading his premisses in favour of the regress.

In the first question (i), there are five ambiguities: the first is the referent of the indefinite pronoun τι (132d6); the second is the antecedent of the participial phrase τῷ εἰκασθέντι (d7); the third is the direct object of τῷ εἰκασθέντι (d7, the second "it" of the translation); the fourth is the subject of ἀφωμοιώθη (d7, the third "it" of the translation); and the fifth is the direct object of ἀφωμοιώθη (d7, the fourth "it" of the translation). The hypothesis on which we shall proceed in our attempts to resolve these ambiguities, is that there are two objects — the τι and τὸ εἶδος (d6). And so, the protasis of the conditional supposes that the τι has come to resemble τὸ εἶδος; and the apodosis of the conditional asks whether this supposition necessarily entails τὸ εἶδος being like to the τι.

Working under this hypothesis, the τι of the first ambiguity and the τῷ εἰκασθέντι of the second ambiguity should refer to the same object. The question is, what is this object? If Socrates were speaking, the answer would

[16] By answering in this way, Socrates is committing the fallacy of "returning an answer as if to a single question" that is discussed by Aristotle in his *Sophistical Refutations* (6, 169b14–5, trans. W. A. Pickard-Cambridge).

be plain, since particulars — τὰ ἄλλα (132d2) — are the only objects that have been said to resemble the Form. Parmenides could have easily said this, yet he chose to employ an indefinite pronoun and a participial phrase that obfuscates the identity of the antecedent. The reason Parmenides needs to make this move is because the regress requires that Forms as well as particulars may participate in Forms — that is, the first term of the predicate "M" must range over the domain D, not merely over the domain P. Therefore, the antecedent of τι and τῷ εἰκασθέντι is any Form or particular that participates in a Form.

The remaining three ambiguities are made explicit by the latter three occurrences of "it" in the translation; but given our initial assumption, it is easy to assign antecedents to these pronouns. Parmenides asks whether it is "possible for that Form not to be like that which resembles [it], insofar as it is like to it." Since we have admitted two possible objects, the τι (call it object *a*) and τὸ εἶδος (call it object *b*), the following assignments produce a cogent reading: is it possible for *b* not to be like *a* which resembles *b*, insofar as *a* is like to *b*? Thus, the first question, over-translated but rendered as explicitly as possible, becomes: "Well, if something resembles the Form, is it possible for that Form not to be like that something which resembles the Form, insofar as that something is like to the Form?"

The second question (ii) builds upon the generality of the first, and ambiguities are generated by dropped subjects and direct objects. There are three instances of "like" in the question, each of which must be satisfied with a direct object. But the character of the second question is more general than the first — Parmenides no longer speaks about the τι and τὸ εἶδος, but rather about τὸ ὅμοιον and ὁμοίῳ. And so, we are no longer talking about a something and a Form, but rather about two objects in general.

Parmenides asks whether there is "some device by which that which is like is not like that which is like [it]." And so, continuing the hypothesis that he is talking about two objects in general, call them *a* and *b*, the basic structure of the question is, "is it possible for *a* not to be like *b*."[17] In this case, both *a* and *b* have a further qualification: they are both "that which is like" (τὸ ὅμοιον and ὁμοίῳ). Immediately we are presented with the problem of finding objects for both instances of this qualification —

[17]The logical force of "is there some device by which" is modal, hence my rendering of the basic structure of the question in terms of possibility.

because if a is like, then it must be like something; and if b is like, it must also be like something.

There are two possible candidates in virtue of which an object may be described as like: it may be like itself, or it may be like some other object. And if the latter, given that we are dealing with a pair of objects, they may be like each other, or they may be like some third object. In attempting to determine which of these Parmenides intends, it seems reasonable to look for an object which motivates a negative[18] response to the question of whether it is possible for a not to be like b. Thus, it is unlikely that a and b are described as like because each is like itself, because such information provides no motivation for supposing that it is not possible for a not to be like b.[19]

In contrast, if we suppose that a must be like b because a and b are both like some other object, then we have found what we are seeking. That is, if a and b are both like some third object, or a is like b and b is like a, then we have good reason to describe a as being like b. And so, it is likely that a and b are described as being like for one of these reasons — but for which is not yet clear. Suppose that a and b are like each other. This supposition invites the inference that a must be like b, because contained in the assumption that a and b are like each other is the claim that a is like b. In other words, the question becomes: is it possible for a (which is like b) not to be like b (which is like a). The answer to this question is readily apparent due to the stipulation, in the first part of the question, that a is like b — given this, a must be like b. Therefore, the supposition that a and b are like each other fulfils the negative-response criterion.

Now suppose that a and b are like some third object c. Under certain circumstances, it is quite possible to infer that a is like b. For example, suppose that a, b and c are all equilateral triangles. In this case, a and b are like c, and we may also infer that a is like b. But in order for this supposition to hold, we must have a credible candidate for c that fulfils the negative-response criterion — and no such object is explicitly mentioned, nor is one necessitated by the argument hitherto. In addition to this, we

[18]Negative. because this is Socrates' response (132d9), and Parmenides' rhetorical use of the word μηχανή is pejorative: he is asking whether Socrates can come up with some contrivance or artificial means by which a may not be like b — which anticipates a denial.

[19]In what follows, I shall express "it is not possible for a not to be like b" by a more compact, yet equivalent phrase, "a must be like b."

should consider that just because a is like c, and b is like c, it does not follow that a is like b — suppose that a is a green triangle, b is a red square and c is a green square.[20] Therefore, we may reject the current supposition in favour of the previous supposition: a and b are both described as like because they are like each other.[21]

We shall now examine the relation of the second question to the first. It is unlikely that the two questions are independent. Although neither Forms nor particulars are mentioned in the second question, it would be strange to talk about objects being like each other and not be thinking of Forms and particulars, given Socrates' thesis. The most natural way to read the second question is as a generalisation of the apodosis of the first question. The apodosis of the first question asks whether it is possible for the Form not to be like that which resembles the Form; the second question asks whether there is some device by which that which is like may not be like that which is like it. Both ask about the possibility that some object is not like some other object (τὸ εἶδος and the τι in the first question; the objects that are described as like in the second question). And so, in the second question, the first instance of "that which is like" includes τὸ εἶδος, and the second instance of "that which is like" includes the τι.

This means that the apodosis of the first question becomes the antecedent of a conditional whose consequent is the possibility expressed by

[20]One might object that a and b are still like one another insofar as they are plane figures; but we do not infer this likeness from the fact that a is like c (qua greenness) and b is like c (qua squareness).

[21]There are two additional but related possibilities, which I include here for the sake of completeness. First, an object may be described as being like in virtue of its being like something-or-other. That is, object a has entered into some relation of likeness, and so it is said to be "like." Nevertheless, since a is not like without qualification, it is necessary to inquire as to the object which it is like (call this b). If b is like a, or if a and b are like some c, then this interpretation reduces to those already discussed.

The remaining possibility is that a is like some x (where x is not identical to b), and b is like a: "$(\exists x)Lax \;\&\; Lba$". A paraphrase of Parmenides question would be as follows: is there some device by which that a, which is like something, is not like that b which is like a. The advantage of this interpretation is that it makes Socrates' response more than a repetition of an assumption of the question; and it suggests a way out of the regress (namely, by denying that a is like something). The difficulty is that this interpretation makes a break between the first question (132d6–7) and the second question (d8), so that the second question no longer builds upon the generality of the first. But the phrasing of the second question indicates a close relation between the two; and so we must reject this interpretation.

the second question: if it is possible for the Form not to be like that something which resembles the Form, then there is some device by which that which is like is not like that which is like. And if there is no such device. then it is not possible for the Form not to be like that something which resembles the Form.

Nevertheless, the reading that supposes τὸ εἶδος and the τι to be included in the first and second instances of "that which is like" of the second question respectively supplies a fresh difficulty. The protasis of the first question — that something resembles the Form — licences the description of the τι as "that which is like." But nothing licences the description of τὸ εἶδος as "that which is like" — in fact, that is the very point under contention. If the second question asks whether *a* (which is like *b*) is not like *b* (which is like *a*), the particular case involving τὸ εἶδος and the τι asks whether τὸ εἶδος (which is like the τι) is not like the τι (which is like τὸ εἶδος). And so, although the first question asks about the possibility of τὸ εἶδος being like the τι. the second question imports the assumption that τὸ εἶδος is like the τι. That is, the assumption becomes part of the subject of the question itself![22]

Since Socrates responds to Parmenides' two questions as if they were one question, we must ask ourselves which question Socrates is responding to with οὐκ ἔστι (132d9). Unfortunately, Socrates gives no direct indication.[23] If we suppose that Socrates gives a negative answer to the first question, he has already admitted (conditionally) that τὸ εἶδος resembles the τι, which licences the corresponding assumption in the second question. On the other

[22]This interpretation attributes to Parmenides some measure of underhandedness, but such a move is not out of character for him in the first part of the dialogue: witness the shift from the day to the sail in the Dilemma (131b3–c4). Nevertheless, we could avoid this characterisation of Parmenides if we accept a different interpretation of the second question. In other words, if we relax the negative-response criterion in our interpretation of the second question, then we can avoid committing Parmenides to being underhanded, but at the price of supposing that Socrates' response to the question is not well-grounded.

Why should we suppose that Parmenides is being underhanded as opposed to supposing that Socrates is being naïve? Especially since the young Socrates is portrayed as being a bit wet-behind-the-ears, this would not seem unreasonable. But to suppose that Socrates is being naïve adds nothing to the argument; it merely transfers the error from Parmenides to Socrates. In contrast, the interpretation presented above has the virtue of yielding a strong reading of the logic of the argument.

[23]οὐκ ἔστι may either be the denial of the implicit ἔστι in the phrase οἷόν τε (d6) of the first question, or the denial of the explicit ἔστι (d8) in the second question.

hand, if Socrates is responding to the second question, then Socrates is doing nothing more than affirming a tautology.

The way that Socrates and Parmenides proceed in the dialogue, it is as if Socrates responds negatively to the first question. What rôle the second question had in prompting this response is not clear; but we may speculate that Parmenides takes Socrates' answer to be a negative response to the second question, which implies (if we have construed the relation between the two questions correctly) a negative response to the first question. In any case, the upshot for us is that the relation of resemblance is symmetrical:[24] if the particular resembles the Form, then the Form resembles the particular. This is the sentence we shall symbolise presently.

In addition to issues surrounding Parmenides' framing of the second question, we should also note that Parmenides is guilty of suppressing any difference between "resemblance," "likeness" and corresponding verbs. If Socrates intended there to be a difference between "ἐοικέναι" and "ὁμοιώματα" (132d3), he registers no complaint when Parmenides uses the terms interchangeably. And so in our symbolisations, we shall use only the predicate "R" for "resemblance" and its synonyms.[25] Here is the symbolisation of the first extracted premiss:

(3.a) If something resembles the Form, then the Form is like that which resembles the Form.

(3.b) For all Forms and participants, if the participant resembles the Form, then the Form resembles the participant.

(3.s) $(\forall x_f)(\forall u_d)(Rux \rightarrow Rxu)$[26]

Notice that "R" in (2) and (3) are the same predicates, but whereas (2) is meaningful only in the case where "R" describes the relation of a particular to a Form (not the relation of a Form to a particular, since "R" is identified

[24]That Socrates' response admits the symmetry of resemblance is the consensus among scholars both ancient and modern (e.g., Proclus §912; Dorter 1994, 38; Gill 1996, 43; Allen 1997, 180–1).

[25]This has the effect of inviting us to drop the last two conjuncts of (1), since when we exchange "L" for "R," we get a repetition: "$(\exists x_f)(\exists y_f)(\exists u_p)(\exists v_p)(x \neq y \ \& \ u \neq v \ \& \ Px \ \& \ Py \ \& \ Rux \ \& \ Rvy \ \& \ Rux \ \& \ Rvy)$" But in order to stay as close to the text as possible, we shall retain them in our symbolisation.

[26]A more precise translation would see the phrase modally qualified: "$\sim\Diamond\sim(\forall x_f)(\forall u_d)(Rux \rightarrow Rxu)$": but since $\ulcorner\sim\Diamond\sim p\urcorner$ is defined as $\ulcorner\Box p\urcorner$, and p may be inferred from $\ulcorner\Box p\urcorner$, I shall opt for the weaker claim p in order to avoid the complications of modal logic.

with "M," whose signature is <P,F>), no such restriction exists for (3). That is, the terms of "R" in (3) may either be Forms or particulars.

1.2.2 Second Premiss (132d10–e2)

The second premiss that Parmenides extracts from Socrates is a one-over-many premiss specifically tailored to the context of the Likeness Regress. As with our analysis of the first premiss (d6–9), it is helpful to proceed under the hypothesis that Parmenides is thinking about two objects — but this time, it does not matter whether the two objects are Forms or particulars. And since Socrates has accepted (3), we can assume that the Form and the participant resemble one another.

The usual one-over-many premiss allows us to infer, from the fact that particulars have the same character, that there is one Form in virtue of which these particulars have the same character (e.g., *R.* 507b5–7, *Prm.* 132a1–4). Here in the Likeness Regress, Parmenides does not speak of particulars having the same character, but rather describes them as being like one another. Socrates has no difficulty in accepting this, and nor should he, given the consistency with which he maintains that many particulars of the same character participate in one Form.

The two objects that resemble one another, a and b, are the antecedents of the two occurrences of "that which is like" respectively. Thus, Parmenides' question is whether object a (which resembles object b) and object b (which resembles object a) participate in one and the same Form. Symbolically, the second additional premiss is as follows:

(4.a) If two objects resemble one another, then they both participate in one and the same Form.

(4.b) For all Forms and particulars, if two objects resemble one another, then they both participate in one and the same Form.

(4.s) $(\forall u_d)(\forall v_d)[(Ruv \;\&\; Rvu \;\&\; u \neq v) \rightarrow (\exists x_f)(Mux \;\&\; Mvx)]$

1.2.3 Third Premiss (132e3–5)

The next question Parmenides asks sets the stage for a small interpretive controversy. Parmenides asks if that in which like things participate in order to be like is "the Form itself (αὐτὸ τὸ εἶδος)?" There are two possible readings, which we shall designate Reading A and Reading B respectively.

Given two objects that resemble one another, Reading A takes "αὐτὸ τὸ εἶδος" to be the Form in virtue of which the two objects resemble one another. Reading B supposes that "αὐτὸ τὸ εἶδος" refers to the Like, in virtue of which the two objects are said to resemble one another.

According to Reading A, similar objects have the same character in some respect, and on account of this they are said to participate in the Form that corresponds to that character. For example, Helen and Penelope are both beautiful, and so they resemble each other in that respect. Consequently, we may infer that both Helen and Penelope participate in the Beautiful. According to Reading B, similar objects are said to resemble one another, and on account of this they are both said to participate in the Like. For example, both Helen and Penelope have the character of likeness insofar as they are both beautiful. Consequently, we may infer that both Helen and Penelope participate in the Like.

Commentators who identify Reading B as a viable interpretation tend to present it as a superior alternative to Reading A. There are three arguments that are marshalled on behalf of Reading B, which we shall now recount briefly. The first argument we shall call the argument from redundancy (e.g., Gill 1996, 44). Proponents of this argument claim that on Reading A, the third premiss (132e3–5) is merely a repetition of the second premiss (d10–e2). That is, both premisses assert that two objects that resemble one another participate in the same Form. This is an unexpected result in such a tight argument, say the proponents of Reading B, and so we must abandon Reading A. Under Reading B, the problem disappears, because the second premiss does not specify the Form which like objects have in common, whereas the third premiss fingers the Like.

Editors have been aware of the potential for redundancy for some time. As was mentioned earlier, the editions of Burnet and Diès excise the word εἴδους in the second premiss (132e1). Presumably, these editors recognised the redundancy and decided to omit the words. By omitting εἴδους, we move from a more general premiss to a more specific premiss: the objects participate, and then they participate in the Form. As a brief aside, there are two good reasons (aside from Reading B itself) not to follow these editors. First, the manuscript tradition is not in question — Proclus himself retains the εἴδους. Second, neither Socrates nor Parmenides have ever suggested that participation might be in something other than a Form, and so even if the εἴδους is omitted, we would assume it implicitly, and still have a redundancy.

But back to the argument from redundancy. Against those who advance this argument, we might challenge the very existence of a redundancy. After all, if the premisses are redundant, then the questions should not only be logically equivalent, but not differ in emphasis. Plato is writing a dialogue, not a treatise; and so, in order to highlight certain relations, he may choose to posit the same claim in different ways. This is exactly what we find. The second premiss focusses on the similar objects as the sufficient condition for those objects participating in one and the same Form. The third premiss focusses on similar objects, which are similar in virtue of participation, as the sufficient condition for participation in the Form itself. Now, supposing that these claims are logically equivalent, from that perspective, there is a redundancy;[27] but from a stylistic perspective, there is every reason to pause at this point and highlight the fact that similar objects are similar in virtue of participating, and this participation must be in some one Form. It adds clarity to the proceedings, and if Socrates accepts both formulations, so much the better for Parmenides.

There is another possible evasion of the argument from redundancy that we might employ, and that is to construe the phrase "in virtue of participation in which like things are like (οὗ δ'ἂν τὰ ὅμοια μετέχοντα ὅμοια ᾖ)"[28] (132e3) causally. This would avoid the supposed redundancy by adding a new piece of information that was not present in the second premiss. First, we are told that like things participate in one and the same Form (d10–e1); then we are told that participation in the Form itself is that in virtue of which like things are like (e3–4). The claim that participation is that in virtue of which like things are like is added by the second premiss, and so there is no redundancy.

The second argument against Reading A is the argument from scope, which is an argument originating with Allen (1997, 181–2). Allen argues that Reading A commits us to holding that there is a Form that corresponds to every character in virtue of which a pair of objects are said to be like. For example, if Socrates and Theaetetus are both pale, then they are both like insofar as they both participate in the Pale. But Socrates has admitted, earlier in the dialogue, that while there are Forms of the Like (128e6–29a1),

[27]The claims would be "$(\forall u_d)(\forall v_d)[(Ruv \ \& \ Rvu \ \& \ u \neq v) \rightarrow (\exists x_f)(Mux \ \& \ Mvx)]$" and "$(\forall u_d)(\forall v_d)[(Ruv \ \& \ Rvu \ \& \ u \neq v \ \& \ [(\exists x_f)(Mux \ \& \ Muv) \rightarrow (Ruv \ \& \ Rvu \ \& \ u \neq v)]) \rightarrow (\exists x_f)(Mux \ \& \ Mvx)]$" respectively, which are obviously logically equivalent.

[28]Literally, "whatever things are like are like," due to the subjective. But this obscures the meaning in English.

the Just, the Beautiful, the Good (130b7–9) and others, there are not Forms of every character (130c7–d9) — and paleness is likely to be one of those. But Reading A, Allen argues, requires there to be Forms of any character in virtue of which two objects are similar; and since this interpretation contradicts Socrates' earlier admission, it cannot be what Socrates and Parmenides have in mind.

Against this argument, it is easy to raise objections. The argument from scope assumes that the puzzles in the first part of the dialogue are all consistent with the discussion of scope (130a4–31a4). It is true that Allen does not contradict himself when he advances this assumption (his interpretations of the first part of the dialogue frequently make reference to this), but he does not provide an argument for his position, and it does not seem to be necessary. Furthermore, even if the puzzles are all consistent and there are only Forms of certain characters, this does not discount Reading A. For if the puzzles are consistent, and Socrates and Parmenides are considering them to be so, then it is foremost in the minds of our interlocutors that they are speaking only of those characters which have Forms, and so it is not necessary to make explicit an assumption that has been constantly present throughout the exchange. And so, we should read αὐτὸ τὸ εἶδος not as referring to the Like alone, but rather to any Form that corresponds to a character.

The third argument against Reading A, which we shall call the argument from the conclusion, looks to Parmenides' concluding sentence of the Likeness Regress for support. Those who endorse this argument (e.g., Gill 1996, 45) suppose that Parmenides' statement, that "the others do not participate in the Forms by likeness (ὁμοιότητι)" (133a5), indicates that it is the Form of the Like that he has in mind in the third premiss. After all, since Socrates does not specify, Parmenides is free to construe Socrates' thesis in terms of the Like — and that Parmenides does so is indicated by his conclusion. In response to this argument, we may concede that it is possible to read Parmenides' conclusion as proposed, but there is no inconsistency in taking it to mean that particulars do not participate in the Form by being like the Form (which is a direct denial of Socrates' thesis, and what we would rather expect). And so, the argument from the conclusion does not propose an impossible reading, but it is contrary to the expected refutation of Socrates' thesis, and so shows signs of being rather forced.

The arguments for rejecting Reading A are tenuous at best; and in the absence of definitive evidence in favour of rejecting this reading, we should

not be in a hurry to discount it. But just because we are not forced to reject Reading A does not mean that we should reject Reading B: neither the argument from redundancy nor the argument from the conclusion can be definitively refuted. In other words, I take Reading B to be viable, but not superior to Reading A. And so, the best solution is to put the differences between the readings down to a carefully constructed passage: the passage has an ambiguity that leads to two different interpretations; but this ambiguity contributes to the richness of the interpretation. The regress may be constructed regardless of our selection of Reading A or Reading B; and so we shall preserve both readings in our interpretation.

Notice that by preserving the two readings, we get two quite different interpretations of the Likeness Regress. In the symbolisation, the difference will be minimal, because the logic we are using does not have the power to express all the details of the argument (nor would we want it to, since we are using logic as a tool to get at the details of the argument, not the argument to get at the details of our logic). But under Reading A, we have participation in a Form being posited on basis of two objects with characters that resemble one another. Under Reading B, we have participation in the Like being posited on the basis of two objects having the character of likeness (for two objects that resemble one another are said to be like). The latter reading is a step beyond what we had at Reading A, because two objects can have the character of likeness only if they have some other character in common. And so, whereas Reading A involves two objects, two characters and the Form, Reading B involves two objects, two characters, two characters of likeness, and the Like. This will become more important when we return to analyse the premisses of the argument.

And so, given two possible readings, what is the best way to symbolise them? Since we have already admitted that Reading A provides a premiss that is logically equivalent to (4), we need not go to the trouble of symbolising a special premiss for this reading. Instead, we shall just drop the symbolisation and go with (4) alone on this reading. On Reading B, we have a premiss that is not logically equivalent, but still quite similar to (4).

(5.a) If two objects that resemble one another participate in order to be like, then they both participate in the Like.

(5.b) For all Forms and particulars, if two objects resemble one another, then they both participate in the Like.

(5.s) $(\forall u_d)(\forall v_d)[(Ruv \ \& \ Rvu \ \& \ u \neq v) \rightarrow (Mul \ \& \ Mvl)]$

In this symbolisation, "l" is the name of the Like in domain F. As it stands, in order to avoid confusion with the previous premiss, Reading B will use (5) in place of (4).

1.3 The Regress (132e6–133a4)

At the heart of the Likeness Regress is, not surprisingly, a regress; and it is this regress that forces Socrates to abandon his thesis. In preparation for getting into the details of the regress, let us recount the premisses according to Reading A and Reading B:

Reading A

(1) $(\exists x_f)(\exists y_f)(\exists u_p)(\exists v_p)(x \neq y \ \& \ u \neq v \ \& \ Px \ \& \ Py \ \& \ Rux \ \& \ Rvy \ \& \ Rux \ \& \ Rvy)$
(2) $M = R$
(3) $(\forall x_f)(\forall u_d)(Rux \rightarrow Rxu)$
(4) $(\forall u_d)(\forall v_d)[(Ruv \ \& \ Rvu \ \& \ u \neq v) \rightarrow (\exists x_f)(Mux \ \& \ Mvx)]$

Reading B

(1) $(\exists x_f)(\exists y_f)(\exists u_p)(\exists v_p)(x \neq y \ \& \ u \neq v \ \& \ Px \ \& \ Py \ \& \ Rux \ \& \ Rvy \ \& \ Rux \ \& \ Rvy)$
(2) $M = R$
(3) $(\forall x_f)(\forall u_d)(Rux \rightarrow Rxu)$
(5) $(\forall u_d)(\forall v_d)[(Ruv \ \& \ Rvu \ \& \ u \neq v) \rightarrow (Mul \ \& \ Mvl)]$

If our reconstruction of the premisses is correct, then we should be able to generate the regress described by Parmenides (132e6–a3):

> Then it is not possible for something to be like the Form, or for the Form to be like another; otherwise, alongside the Form there will always appear another Form. And should that be like anything, another again, and never will a new Form always cease to arise, if the Form comes to be like what participates in it.

Parmenides leaves it up to us to fill in the details, but it is evident that he wants us to reject part of (1) (that is, Socrates' account of participation), on the ground that it causes an infinite regress.

In terms of a symbolic representation, we should be able to take the premisses of Reading A, or the premisses of Reading B, and generate an additional Form, which is not identical to any of the Forms posited in the premisses. And given this additional Form, we should be able to generate yet another Form, and so on *ad infinitum*. But with our current arrangement of premisses, this is impossible — we need to introduce some additional factors to help Parmenides out. Let us look first at a sequence of reasoning that sketches out the regress in general terms:

(a) Assume that there exists some Form x and some particular u, such that u resembles x. [1]

(b) If u resembles x, then x resembles u. [3]

(c) **Reading A** Since u resembles x and x resembles u, then there is some additional Form y in virtue of participation in which x and u resemble one another. [4]
Reading B Since u resembles x and x resembles u, then there is some additional Form y (where y is the Like) in virtue of participation in which x and u resemble one another. [5]

(d) If u participates in y and x participates in y, then u resembles y and x resembles y. [2]

From here, the sequence repeats, starting at (b) and going through to (d), except with Form x and Form y being the two objects that resemble one another in (b).

This is how Parmenides imagines the regress to work, but as it stands, there are two related gaps in the premisses as they have been stated prior to the regress. In our sketch of the regress, we allowed "some additional Form y" to be generated in both readings at (c); but this is not required by the premisses. In fact, (4) and (5) only specify the existence of some Form x, which is not necessarily different from the Form supposed to exist at (1). Under an interpretation uncharitable to Parmenides, the Form in which both x and u participate at (c) could be the Form x itself (that is, x participates in itself, and u participates in x). This would terminate the regress, and so we know that the Form introduced at (c) should be an

additional Form to allow for the possibility of a regress.[29]

The second gap also focusses on (c). Assuming that we are on our third time through the regress, and we have added the restriction that the two participants participate in an additional Form at (c) — there is still the problem of establishing the uniqueness of this Form (for if the new Form is not different from other Forms that have previously been admitted. there may be an infinite cycle, but not an infinite regress). The first time through the regress, we have u (a particular) and x (a Form), both of which participate in y (a Form). The second time through, we have x and y participating in z (a Form).[30] The third time through, we have y and z participating in a Form, and there is nothing to prevent this Form from being x. The reason for this is that, even if we have specified that the two participants must participate in a Form that is not identical to either of the participants, we have not specified that they must participate in a Form that has not been supposed to exist in the argument hitherto. This short-circuits the regress, because although we have an infinite loop in terms of an explanation, we do not have an infinite number of Forms being generated, and so Parmenides' conclusion does not obtain.

It is easy enough to amend (4) and (5) to account for the first gap -- we simply specify that the x (or l) of the consequent is not identical to the u or the v of the antecedent. Here are (4) and (5) with the first gap bridged:

(4) $(\forall u_d)(\forall v_d)[(Ruv \;\&\; Rvu \;\&\; u \neq v) \rightarrow (\exists x_f)(Mux \;\&\; Mvx \;\&\; x \neq u \;\&\; x \neq v)]$

(5) $(\forall u_d)(\forall v_d)[(Ruv \;\&\; Rvu \;\&\; u \neq v) \rightarrow (Mul \;\&\; Mvl \;\&\; l \neq u \;\&\; l \neq v)]$

So by specifying that the Form introduced in the consequent is not identical to the objects that resemble one another (u, v), we require the introduced Form to be "additional."

[29]This gap was first recognised by Vlastos, and his solution (parallel to ours) is what he calls the non-identity assumption (1954, 330): "If a is F, it cannot be identical with the Form, F-ness; for if this were true, there would be no reason at all why a and F-ness could not both be F in virtue of F-ness." Vlastos implicitly recognises the second gap in his analysis of the Largeness Regress (1965a, 262).

[30]We do not have u, x and y all participating in z because of the way Parmenides formulates the regress: that which the Form is like (τῳ, a1) is clearly singular. This implies that the new Form enters into a relation of likeness with one other object, thereby generating the regress. Of course, the regress could be generated by supposing that u, x and y all participate in z (cf. Cohen 1999, 285–6), but this is not what Parmenides says.

As for the second gap, what we need is a premiss that specifies that the additional Form introduced at (4) or (5) is not identical to any Form previously introduced in the regress. Fortunately, the amendment required by the second gap has easily recognisable iterations. The initial case has premisses identical to (4) and (5) above; the first iteration is as follows:

(4′) $(\forall u_d)(\forall v_d)(\forall w_d)\{(\exists x_f)[(Ruv \,\&\, Rvu \,\&\, u \neq v) \,\&\, (Mux \,\&\, Mvx \,\&\, x \neq u \,\&\, x \neq v) \,\&\, (Rwx \,\&\, Rxw \,\&\, x \neq w)] \rightarrow (\exists x'_f)(Mwx' \,\&\, Mxx' \,\&\, x' \neq w \,\&\, x' \neq x)]\}$

(5′) $(\forall u_d)(\forall v_d)(\forall w_d)\{[(Ruv \,\&\, Rvu \,\&\, u \neq v) \,\&\, (Mul \,\&\, Mvl \,\&\, l \neq u \,\&\, l \neq v) \,\&\, (Rwl \,\&\, Rlw \,\&\, l \neq w)] \rightarrow (Mwl' \,\&\, Mll' \,\&\, l' \neq w \,\&\, l' \neq l)]\}$

The consequent of the first iteration describes the additional Form (x' or l') in which the Form of the initial case (x or l) participates. Also note that the first iteration is dependent on the initial case to the extent that the antecedent of the first iteration will be true when both the antecedent and consequent of the corresponding initial case is true.

For the sake of establishing a clear pattern, we shall state the second iteration as well.[31] Note that at the second iteration, the argument's premisses will consist of (1), (2), (3) — and then (4), (4') and (4") for Reading A, or (5), (5') and (5") for Reading B:

(4″) $(\forall u_d)(\forall v_d)(\forall w_d)(\forall w'_d)\{(\exists x_f)(\exists x'_f)[(Ruv \,\&\, Rvu \,\&\, u \neq v) \,\&\, (Mux \,\&\, Mvx \,\&\, x \neq u \,\&\, x \neq v) \,\&\, (Rwx \,\&\, Rxw \,\&\, x \neq w) \,\&\, (Mwx' \,\&\, Mxx' \,\&\, x' \neq w \,\&\, x' \neq x) \,\&\, (Rw'x' \,\&\, Rx'w' \,\&\, x' \neq w')] \rightarrow (\exists x''_f)(Mw'x'' \,\&\, Mx'x'' \,\&\, x'' \neq w' \,\&\, x'' \neq x' \,\&\, x'' \neq x)]\}$

(5″) $(\forall u_d)(\forall v_d)(\forall w_d)(\forall w'_d)[(Ruv \,\&\, Rvu \,\&\, u \neq v) \,\&\, (Mul \,\&\, Mvl \,\&\, l \neq u \,\&\, l \neq v) \,\&\, (Rwl \,\&\, Rlw \,\&\, l \neq w) \,\&\, (Mwl' \,\&\, Mll' \,\&\, l' \neq w \,\&\, l' \neq l) \,\&\, (Rw'l' \,\&\, Rl'w' \,\&\, l' \neq w')] \rightarrow (Mw'l'' \,\&\, Ml'll'' \,\&\, l'' \neq w' \,\&\, l'' \neq l' \,\&\, l'' \neq l)]\}$

We can readily identify the pattern. The consequent of the conditional introduces the new Form (x, x', x'', ... or l, l', l'', ...) and states that (i) the new Form is that in virtue of which the Form introduced in the previous iteration and some object (w, w', w'', ...) are similar, and that (ii) the new Form is not identical to the Form introduced in any previous iteration.

[31] We shall only work up to the second iteration, because this is where Parmenides himself stops in his explanation: "alongside the Form there will always appear another Form" (first iteration, e7); "and should that be like anything, another again" (second iteration, a1). But the pattern can be extended as far as is required.

The antecedent of the conditional is the conjunction of the antecedent and consequent of the conditional of the previous iteration, thus making the current iteration dependent on all previous iterations.

1.4 The Upshot (132e6–7, 133a5–7)

The upshot of the regress is exactly what we expect. Parmenides asserts, and Socrates agrees, that "it is not possible for something to be like the Form, or for the Form to be like another" (e6–7). This is a denial of the last four conjuncts of (1). But if there is no resemblance between Forms and others, then (2), which defines participation in terms of resemblance, will never obtain. Thus, the upshot of the regress is a denial of the account of participation: $M \neq R$.

There is no way to reach the upshot in a deduction from the premisses that have been set out, precisely because the existence of an additional Form is not a sin in logic; nor is the existence of an infinite regress. Nevertheless, it is clear from what Socrates says prior to our present passage that an infinite regress is untenable because it calls into question the singularity of the Form. Earlier in his discussion with Parmenides, Socrates describes the Form as "that which is one" (129b7); and later during the Largeness Regress, Socrates admits that the Large is 'one' on account of many large particulars seeming to share a common character (132a5–7). With an infinite regress on his hands, the Form ceases to be one over many, instead becoming many over many. Thus, an additional premiss is required to make our symbolisation work. We can take our cue as to the shape of this additional premiss from Parmenides' claim that the appearance of a new Form will never cease (133a1–2).

The two simplest ways to incorporate this assumption into our argument is as a conditional statement (if infinite regress, then $M \neq R$) leading to a conditional elimination, or as a negation (not infinite regress) leading to a *reductio*. If what we said in the first sentence of this chapter holds, the latter best represents the mechanics of the argument. And so, at any particular iteration of the regress, we may imagine a corresponding sixth premiss that allows us to generate a contradiction. The premiss for the second iteration would look like this:

(6) $\sim[(\exists u_d)(\exists v_d)(\exists w_d)(\exists w'_d)[(\exists x_f)(\exists x'_f)(\exists x''_f)(Mux \;\&\; Mvx \;\&\; x \neq u \;\&$

$x \neq v) \ \& \ (Mwx' \ \& \ Mxx' \ \& \ x' \neq w \ \& \ x' \neq x) \ \& \ (Mw'x'' \& \ Mx'x'' \ \& \ x'' \neq w' \ \& \ x'' \neq x' \ \& \ x'' \neq x)]$

The premiss can be truncated or expanded to generate a contradiction at any point in the regress beyond the initial case (which, presumably, is not an untenable situation).

It should be pointed out that this is an imperfect solution, because it is a never-ceasing appearance of new Forms (133a1–2) that prompts the rejection of Socrates' account of participation, not a regress at a particular finite iteration. Such are the restrictions of our chosen logic (or at least my symbolisation). And while a more powerful logic might allow us to represent the regress more accurately, it is doubtful that such complications would allow us to see the argument's structure with a clarity that corresponds to the effort required to represent the argument in such a logic.

Chapter 2

Resemblance and the Regress

The first chapter concentrated on representing the argument-form of the Likeness Regress in second-order logic. It is the purpose of this chapter to flesh out the details that were not specifically addressed during that process. In particular, we shall investigate two aspects of the argument, beginning with the relation that is the focus of the argument, namely the resemblance relation. A cursory glance at the symbolisation of the Regress reveals why an understanding of resemblance necessarily colours any interpretation of the argument: first, Socrates identifies resemblance with participation in his thesis (2);[1] second, the execution of the regress depends on the symmetry of resemblance (3);[2] and third, "R" is the only predicate-letter to appear in every premiss of the argument, appearing a total of nine times in the first iteration of the regress. Furthermore, several commentators have fingered resemblance as the cause of Socrates' difficulties in the Regress (e.g., Cornford 1935, 94; Miller 1986, 56; Gill 1996, 43; Sayre 1996, 87; Allen 1997, 182–3).

The second aspect that we shall investigate is the mechanics of the infinite regress itself. In the previous chapter, we provided an exposition of the regress with a view to uncovering the argument-form; but we did not consider whether the regress is indeed vicious as it appears, and whether Socrates should accept falling into such a regress as a reason to abandon his thesis. We shall be turning to recent literature on regress arguments to help us with this investigation, and especially to answer the question of

[1] $M = R$

[2] $(\forall x_f)(\forall u_d)(Rux \rightarrow Rxu)$

how a regress may function as the absurdity of a *reductio.* But first, to an analysis of resemblance.

2.1 Defining Resemblance

Our symbolisation in the first chapter reveals that resemblance is identical to participation, and that it is symmetrical. But this is not adequate as an analysis of resemblance. Participation is the relation that Socrates wants to explain in terms of resemblance, and so we must construe resemblance in a way that does not depend on participation. Furthermore. that resemblance is symmetrical is something that resemblance shares with any number of other relations (for example, being equal to, or conversing with), and so this property alone does not tell us what resemblance is.

2.1.1 A Modern Account

We begin our inquiry with a work of D. M. Armstrong, who has written extensively on the resemblance relation.[3] Armstrong's treatment of resemblance (1978, 95–131) stands out because it is more detailed than most other accounts, and because it is largely self-contained. The latter is particularly important, because it allows us to appropriate the discussion without becoming mired in earlier details. In terms of context, the chapters on resemblance appear towards the end of the second volume, in which Armstrong is presenting his own theory of universals. According to Armstrong, the impetus for providing an account of resemblance is nothing less than the completeness of his theory, since any theory of universals gives rise to resemblance relations (1978, 95).

Armstrong confines his discussion of resemblance to resemblance between two particulars, and defines resemblance in terms of the properties of those particulars (1978, 96):[4]

[3]Why not begin with Aristotle (*Met.* Δ9. 1018a16–9)? I do not do this for the simple reason that he defines resemblance in terms of quality, which would force us to spend an inordinate amount of time sorting out what this means. In some places it seems to mean any attribute (*Cat.* 1, 3b15–21); elsewhere it is one category among ten (*Cat.* 4, 1b25–2a4), and then one category among fewer than ten (*Ph.* 5, 1, 225b5–9). Thus, it is simpler to begin with Armstrong and then appropriate his account for my own purposes.

[4]That Armstrong's account of resemblance concerns particulars, as opposed to the particulars and Forms of the Regress, does not diminish the value of the account. We can

> A particular a resembles a particular b if and only if: There exists a property, P, such that a has P, and that there exists a property, Q, such that b has Q, and either $P = Q$ or P resembles Q.

What strikes us immediately is that part of the definition appears to be expressed in terms of the very relation we are trying to define: a and b resemble one another if P resembles Q. But this is not actually a problem: Armstrong is distinguishing between the resemblance of particulars and the resemblance of properties. The resemblance of particulars is partially defined in terms of the resemblance of properties, but the latter is accounted for in terms of parts and wholes, so these two sorts of resemblance are quite distinct from one another.

Furthermore, defining the resemblance of particulars in terms of the resemblance of properties is a strength of Armstrong's account, for this greatly increases its explanatory power. Suppose that we have two objects, one crimson and one red, and we attempt to explain the resemblance with respect to colour strictly in terms of common properties. On the one hand, if we reason that crimson and red are distinct properties, then the two objects do not resemble one another, since they do not have any properties in common. On the other hand, if we reason that the two objects resemble one another insofar as they are red (since crimson is a shade of red), the two objects resemble one another in the same respect in which they differ (for they differ with respect to being shades of red).

Let us consider the first part of the definition, that a resembles b if $P = Q$. Armstrong's understanding of properties restricts P and Q to that which is named by unqualified monadic predicates whose semantics neither restricts the application of the predicate to a finite number of particulars, nor refers to a certain particular.[5] For example, "without vision" is a negated monadic predicate, "larger than" is a polyadic predicate, "wisest of men" applies only to one particular, and "member of the Academy" refers to a

assimilate Forms to Armstrong's particulars because, insofar as resemblance is concerned, particulars are bearers of properties; and this description is applicable to either Forms or particulars in Plato.

[5]We shall not enter into all the complexities of Armstrong's account of properties (1978, 17–8, 61–74) here, since the details are not necessary to appreciate his account of resemblance. Of particular interest to us is what does not count as a property for Armstrong, since this will turn out to be significant when we adapt his conception of resemblance for our purposes.

particular, namely the Academy; and so Armstrong considers none of these to name properties. In contrast, "weighing a kilogram," "having length," and "being a certain shade of blue" are all predicates of the requisite sort, and so each names a certain property.

The second part of the definition is more tricky, since it states that a resembles b if P resembles Q. Resemblance between properties needs to be defined (eventually) in terms of something other than resemblance if a regress is to be avoided. According to Armstrong, P resembles Q when both are members of the same class of properties, a class which is unified by the partial identity of its members (1978, 120–1). In other words, every member of a class of properties has some part in common with every other member of that class.

The example Armstrong favours is that of length, since it is relatively easy to see how a given member stands with respect to every other member in the class of lengths. Supposing that the class of lengths consists of every possible length, then a given length stands in a relation of whole to part with respect to shorter lengths, and in a relation of part to whole with respect to longer lengths. For example, we may understand *half-metre* as standing in a relation of part to whole to *metre*. This is not to say that *metre* itself is composed of parts, since having parts implies that *metre* is divided, and division implies that *metre* is not one (cf. *Prm.* 137d3–4).[6] Rather, the property of a particular that corresponds to *metre,* namely *being a metre,* may be understood as being composed of lesser lengths. Thus, a given length itself does not have parts, but the corresponding property of a particular does, and it is in terms of this correspondence that we understand a whole to part or part to whole relation to obtain with respect to all other lengths. Such relations constitute the unity of the class of lengths, and explain the resemblance between members of the class (cf. Armstrong 1978, 122).[7]

[6]The parts in question are parts with respect to length. Presumably, one may argue that a universal has parts in the sense that different predicates may be applied (cf. *Prm.* 142d1–5).

[7]A recent paper (Pautz, 1997) makes trouble for this conception of universals on the grounds that Armstrong's use of the term "overlap" does not allow him to recognise that universals may have the same constituent parts, but differ with respect to the arrangement of those constituent parts. It seems that Armstrong could avoid this consequence by arguing that the structure of the constituent parts of the universal is, itself, a constituent part.

The extent to which this understanding of resemblance between P and Q can be extended to other classes of properties is not clear, but Armstrong extends it to colours (1978, 124–7), and suggests that it may be extended to the class of shapes without very much difficulty (1978, 123). Obviously, the more classes to which this analysis may be successfully applied, the greater the explanatory power of Armstrong's account of resemblance. But it is also clear that if Armstrong is correct in analysing at least one class of properties in terms of partial identity, then the account goes further than defining resemblance merely in terms of common properties. If we decide that the account does not apply to any other class, then resemblance between P and Q simply would not obtain for these classes.

2.1.2 Resemblance for Socrates

As a basis for understanding resemblance in the Likeness Regress, Armstrong has made a fine beginning; but it is clear that his conception of what counts as a property is not broad enough for our purposes. Socrates identifies resemblance with participation (132d3–5), and so we may presume that for any participation relation, there is a corresponding resemblance relation. But the account of resemblance we have been considering does not allow for such an identification. To illustrate this problem, we simply have to assume a particular that has the character of likeness. Since a particular is like in virtue of participating in the Like (128e6–29a1), we may surmise that the particular resembles the Like insofar as both the particular and the Like are like. But being like is a relation: an object is not merely like, but is like some object. And relations are not properties on Armstrong's account. So the particular may not resemble the Like insofar as both the particular and the Like are like. Since participation is identified with resemblance, if a particular may not resemble the Like, it may not participate in the Like; which in turn means that the particular may not have the character of likeness. But this is contrary to our initial assumption.

The source of this difficulty is the specified grounds for possible resemblance; that is, that in virtue of which two objects may resemble one another. On Armstrong's account, the grounds for resemblance are limited to what he calls properties. Our purposes require that we extend the grounds for resemblance beyond Armstrong's properties. But rather than enumerating the characters in virtue of which two objects may resemble one another, we may short-circuit the issue by keying the grounds for re-

semblance to the scope of the Forms. Although this move creates its own problems which we shall discuss presently, it has two virtues: first, it saves us the trouble of enumeration, since resemblance may obtain for all and only those characters that a particular may acquire in virtue of participation; second, it is a natural fit for the Likeness Regress, since resemblance is identified with participation, and participation may only be in Forms.

When we combine Socrates' claim that participation is for particulars to resemble Forms (132d3–5), with the claim that particulars acquire the character of the Form in the respect that and to the degree that they participate in the Form (128e12–9e5), we can see how the grounds for resemblance should be broadened: a relation of resemblance may obtain for any character that a particular may acquire in virtue of participating in a Form. Therefore, the characters in virtue of which two objects may resemble one another are precisely those characters a particular may acquire in virtue of participating in a Form. Here is what our adjusted account of resemblance looks like:[8]

> An object a resembles an object b if and only if: There exists a character, P, such that a has P by participating in the Form in virtue of which objects are P, and there exists a character, Q, such that b has Q by participating in the Form in virtue of which objects are Q, and either $P = Q$ or P resembles Q.

This account solves any difficulty due to the scope of resemblance being too narrow (such as the case of a particular with the character of likeness that was just discussed), for there is no participation relation for which there is not a corresponding resemblance relation.

This account of resemblance is a good fit for the Likeness Regress. That is, it explains resemblance in such a way that the argument is sound at a particular iteration (according to the symbolisation worked out in the last chapter), beginning with any particular that participates in a Form. We shall briefly examine how this works on Reading A, for Socrates participating in Man, and on Reading B, for a line participating in Line.

In the first case, suppose that we have Socrates, Theaetetus, Man and

[8] As part of the adjusted account, I have done away with talk of particulars and properties in favour of objects and characters. These changes are significant but uncontroversial, since "particulars" may not include Forms, and "property" is a technical term for Armstrong.

some other Form.[9] We will do the same for the next case as well. By the first premiss (1),[10] Socrates resembles Man, and we can explain this resemblance by saying that there is some character that Socrates has, and that is identical to some character that Man has. The character in question, of course, is that character that an object acquires in virtue of participating in Man, namely the character of man. But if Socrates resembles Man insofar as he has a character that is identical to a character of Man, Man must have a character that is identical to a character of Socrates (since the identity of two characters is symmetrical). Therefore, it is clear that resemblance is symmetrical (3). But from here, we are unable to escape the regress, since the resemblance of any two objects generates participation in a unique Form (4,[11] 4′, 4″, ...).

In the second case, suppose we have two lines, Line and some other Form. By premiss (1), the first line resembles Line, because the particular has a character of being a line, which is identical to a character of Line. Note that the second part of the definition of resemblance (that two objects resemble one another in virtue of their characters resembling one another) does not enter into our deliberations at this point: it is sufficient to say that the particular and the Form have identical characters. But if the particular and Form resemble one another, they participate in Likeness (5),[12] and by the symmetry of resemblance between objects that are like (3), the regress is underway (5′, 5″, ...).[13]

2.1.3 Three Difficulties

Despite the apparent success of our account of resemblance with regard to its application, three difficulties emerge when we apply it to Socrates'

[9] We assume Theaetetus and "some other Form," even though two particulars and two Forms are not required to begin the regress, because this brings our initial assumption in line with (1).

[10] $(\exists x_f)(\exists y_f)(\exists u_p)(\exists v_p)(x \neq y \;\&\; u \neq v \;\&\; Px \;\&\; Py \;\&\; Rux \;\&\; Pvr \;\&\; Rux \;\&\; Rvy)$

[11] $(\forall u_d)(\forall v_d)[(Ruv \;\&\; Rvu \;\&\; u \neq v) \rightarrow (\exists x_f)(Mux \;\&\; Mvx \;\&\; x \neq u \;\&\; x \neq v)]$

[12] $(\forall u_d)(\forall v_d)[(Ruv \;\&\; Rvu \;\&\; u \neq v) \rightarrow (Mul \;\&\; Mvl \;\&\; l \neq u \;\&\; l \neq v)]$

[13] An astute reader will note that both of these cases suppose that resemblance obtains because of identical properties; neither one attributes resemblance to properties resembling one another. From this, one might suspect that the account of resemblance has gone further than required; but we shall make use of resemblance between properties in our investigation of resemblance presently, after we call into question an assumption about participation that has not been brought out into the open hitherto.

definition of participation. First, since the scope of resemblance depends on the Forms in which a particular may participate, one might object that the definition of participation is circular. Second, since we are concerned with a particular participating in a Form, resemblance must obtain not with respect to just any character, but with respect to a character relative to the participation relation. Third, participation is an asymmetrical relation (for we say that the particular participates in the Form, not that the Form participates in the particular), but it is identified with resemblance, which is symmetrical. We shall now take up these difficulties in turn.

Circularity of the Definition

The first difficulty is the objection that a circularity arises when we apply our account of resemblance to the definition of participation. This is not an unreasonable concern, since contained in the account of resemblance are the statements "a has P by participating in the Form in virtue of which objects are P" and "b has Q by participating in the Form in virtue of which objects are Q." If we are defining participation in terms of resemblance, how can the definition of resemblance refer to participation? Recall that participation was introduced in the definition of resemblance in lieu of enumerating all the Forms that exist, which would allow us to generate a list of characters in virtue of which objects may resemble one another. Such a list would be controversial and beyond the scope of this study (since our goal is not to determine the scope of the Forms), but it is fundamentally an epistemological problem. Forms are eternal (*Tim.* 29b5), and so the number of Forms does not fluctuate; thus we may theoretically enumerate all the Forms that exist, and hence give a complete list of all the characters in virtue of which objects may resemble one another. Therefore, circularity in the definition of participation is only apparent.

Restrictions on Resemblance

In contrast, the second difficulty is quite real. As it stands, participation is identified with resemblance, so if a particular participates in a Form, it also resembles the Form. But resemblance may obtain with respect to any character that a particular may acquire in virtue of participating in a Form, whereas a particular acquires a very specific character (not just any character) in virtue of participating in a Form. For example, Socrates is

a man in virtue of participating in Man; but Socrates resembles Man in a large number of respects. For example, Socrates and Man are both one, both are the same as themselves, and both are different from others. But it would be strange to say that Socrates participates in the Form Man, and therefore Socrates resembles Man insofar as they are both one. Rather, the resemblance between Form and particular should be relative to the corresponding participation relation.

In the *Phaedo,* Socrates claims that "if anything else is beautiful other than Beauty itself, it is beautiful on account of nothing other than that it participates in Beauty itself, and I speak thus for all" (100c4–6). The protasis of the conditional indicates that Beauty is beautiful;[14] the apodosis indicates that particulars are beautiful in virtue of participating in Beauty. And so, the character the particular acquires by participating in Beauty is not just any character of Beauty. That is, Beauty is one, but Helen is not one in virtue of participating in Beauty. Rather, the character that a particular acquires by participating in Beauty is that in virtue of which the Form is the Form of Beauty. In other words, although Forms may have several characters that they share with particulars, there is only one character that is peculiar to *this* Form in virtue of which it is *this* Form — we shall call this the *essential character* of the Form.[15] Therefore, the resemblance that obtains between objects involved in the participation relation is a resemblance with respect to the essential character of the Form in question.

Symmetry and Asymmetry

The third difficulty raises the issue of identifying an asymmetrical relation with a symmetrical relation. Participation is unabashedly asymmetrical: the particular participates in the Form, but the Form does not

[14]Compare similar claims about the Equal being equal (*Phd.* 74d4–7), and the Large being large (*Prm.* 131a9–132b3).

[15]D. Keyt distinguishes between an ideal attribute, which is an attribute "whose absence from a thing entails that the thing is not a Platonic Idea," and a proper attribute, which is an attribute "whose absence from a thing entails that the thing is not an instance of the given Form" (1969, 12). For example, eternality is an ideal attribute, for without this Beauty would not be a Form; but being beautiful is a proper attribute, for without this Beauty would not be the Form Beauty. Our character of an essential attribute is slightly narrower than a proper attribute, because for Keyt, both man and animal are proper attributes of the Form Man (1969, 13).

participate in the particular. But our account of resemblance is symmetrical, despite the fact that it begins with "an object a resembles an object b if and only if." This initial statement has the appearance of asymmetry (since it does not say "a and b resemble one another if and only if"); but it turns out that if a resembles b, we may go on to assert that b resembles a. To see this, simply assume that we have two triangles, a and b, which are both large. By our account of resemblance, a has the character of largeness, and b has the character of largeness. Hence, a resembles b because the two triangles are large, and the same reason permits the assertion that b resembles a. The symmetry of resemblance is also confirmed by the successful application of our account of resemblance, for without symmetry, we would be compelled to deny (3), and the regress would fail.

There is an insurmountable difficulty that arises when we identify an asymmetrical relation with a symmetrical relation: a contradiction ensues as soon as we assume that either the asymmetrical relation or the symmetrical relation obtains for any pair of objects.[16] Indeed, if asymmetrical participation is identified with symmetrical resemblance, Parmenides does not need anything so complex as a regress to show that Socrates' thesis is absurd; he could have simply argued that if a pair of objects are related to one another asymmetrically, then that relation cannot be identified with a symmetrical relation without absurdity. So the very statement of Socrates' thesis contains a hidden contradiction.

Nevertheless, we may solve this problem on Socrates' behalf by weakening the identification of participation with resemblance. This amounts to a modification of (2). Any modifications made to this premiss decreases the explanatory power of Socrates' thesis, but a minor modification may solve our current problem without seriously affecting Socrates' position. Now, there are two ways in which the identification of participation with resemblance can be plausibly weakened. The first is to make participation

[16]That is, $(\forall x)(\forall y)(Axy \rightarrow \sim Ayx)$, $(\forall x)(\forall y)(Sxy \rightarrow Syx)$, $A = S$, $(\exists x)(\exists y)Axy \models \Lambda$, where "A" is an asymmetrical relation as defined by the first premiss, and "S" is a symmetrical relation as defined by the second premiss. Supposing that a symmetrical relation obtains for some pair of objects would make "$(\exists x)(\exists y)Sxy$" the fourth premiss, and such a sequent would still be deductively valid. But this consideration is not really relevant, since the asymmetrical relation in the sequent is standing in for participation, and if participation does not obtain for at least one pair of objects, what follows would not be of significance. Henceforth, we shall only explicitly consider, as part of our premisses, that the asymmetrical relation obtains (i.e., "$(\exists x)(\exists y)Axy$"), not the symmetrical relation (i.e., "$(\exists x)(\exists y)Sxy$").

a necessary and sufficient condition for resemblance; the second is to make participation only a sufficient condition for resemblance. Unfortunately, although the first of these candidates is appealing, it ends up in contradiction as well.[17] The second candidate rids us of the contradiction.[18] There are three points in favour of this move.

First, there is nothing intrinsically objectionable about an asymmetrical relation being the sufficient condition of a symmetrical relation. For example, suppose that we are studying relations between relatives, and we are told that a is the father of b. In this case, we may take the asymmetrical relation, "is a father of," to be the sufficient condition of the symmetrical relation, "is a relative of," and proceed to use the information that a is a relative of b in our study. Whatever we discover about being a relative will apply to being a father.

Second, supposing that participation is a sufficient condition for resemblance seems to mimic the function of (2) in the regress rather closely: "$(\forall x)(\forall y)(Mxy \rightarrow Rxy)$" licences the inference from "Mux" to "Rux," which is crucial to the regress. In fact, since the regress depends on inferring resemblance from participation but not the reverse, the validity of the regress is not affected at any point.

Third, (2) suggests that participation is a sufficient condition for resemblance, given the restrictive signature of "M". Recall that the signature of "M" is <D,F>, and the signature of "R" is <D,D>. This means that "$M = R$" is undefined in cases where the second term of "M" is not a Form. But since "M" is restricted to instances where the second predicate is a Form and "R" is not restricted in the same way, (2) tells us that every instance of participation may be identified with a corresponding instance of resemblance, but not every instance of resemblance may be identified with a corresponding instance of participation. For example, if Socrates participates in Man, then he resembles Man; but if Socrates resembles Theaetetus, he does not participate in Theaetetus because Theaetetus is not a Form. But this plainly suggests that participation is sufficient but not necessary for resembling.

Before accepting "$(\forall x)(\forall y)(Mxy \rightarrow Rxy)$" as a replacement for "$M =$

[17] $(\forall x)(\forall y)(Axy \rightarrow \sim Ayx)$, $(\forall x)(\forall y)(Sxy \rightarrow Syx)$, $(\forall x)(\forall y)(Axy \leftrightarrow Sxy)$, $(\exists x)(\exists y)$ $Axy \models \Lambda$

[18] $(\forall x)(\forall y)(Axy \rightarrow \sim Ayx)$, $(\forall x)(\forall y)(Sxy \rightarrow Syx)$, $(\forall x)(\forall y)(Axy \rightarrow Sxy)$, $(\exists x)(\exists y)$ $Axy \not\models \Lambda$. A counterexample is as follows: D = $\{\alpha,\beta\}$; Ext(A)=$\{<\alpha,\beta>\}$; Ext(S)=$\{<\alpha,\beta>,<\beta,\alpha>\}$.

R" in (2), it is necessary to dispose of a lingering concern: that "$(\forall x)(\forall y)(Mxy \rightarrow Rxy)$" does not accurately represent Socrates' claim that "this participation that the others come to have in the Form is nothing other than to resemble them" (132d3–5). The desire to avoid ascribing to Socrates a contradiction led to symbolising this claim as "$(\forall x)(\forall y)(Mxy \rightarrow Rxy)$"; but someone might charge us being with overly charitable. Perhaps Socrates' claim is inherently contradictory, and the most accurate symbolisation preserves this contradiction. Nevertheless, a close examination in light of our analysis of resemblance shows that "$M = R$" is not only uncharitable, but also a defective symbolisation.

It is clear that there are types of resemblance that hold between Forms and particulars, but do not involve participation. Consider the case in which Socrates and Beauty are both said to be one. For the sake of the argument, let us hypothesise that Socrates does not participate in Beauty. Since Socrates has the character of being one, and Beauty has the character of being one, Socrates and Beauty resemble one another: "Rsb" (where "s" names Socrates, and "b" names Beauty). If participation is identified with resemblance, we may infer "Msb". But this means that Socrates participates in Beauty, which contradicts our initial hypothesis. Therefore, "$M = R$" is a defective symbolisation; we should accept "$(\forall x)(\forall y)(Mxy \rightarrow Rxy)$" as the appropriate symbolisation of Socrates' claim.[19]

To summarise what we have accomplished so far, we have presented a reading of the Likeness Regress that combines an account of resemblance with a revised version of Socrates' thesis. This reading has several virtues. First, it yields a valid argument-form on either Reading A or Reading B. Second, it avoids ascribing to Socrates a contradiction in his definition of participation. Third, it is coherent with Parmenides' explicit statement of the symmetry of resemblance in (3).

2.2 The Infinite Regress

One of the most neglected aspects of the Likeness Regress is the mechanics of the regress portion of the argument. Commentators spill copious

[19] A pleasant side-effect of this correction is that the Likeness Regress seems to be adequately represented in first-order logic, and not require second-order logic as we have contended hitherto.

amounts of ink over the question of how the regress ought to be construed, or over the question of whether there is a way out of the regress for Socrates. But comparatively little has been written about whether the regress is a good reason to reject Socrates' thesis that participation is the sufficient condition for resemblance.[20]

Now, we might take the position that an infinite number of Forms is reason enough to reject Socrates' thesis: with the appropriate admissions and assumptions, Socrates' thesis clearly leads to an infinite number of Forms; and if such a number is unacceptable, then we can reject the thesis. We can fill out this position by suggesting, as we did at the close of the previous chapter, that there is only one Form of each kind; and when Socrates finds himself with an infinite number of Forms on his hands, he has no choice but to reject his thesis. Since we have a regress and not just a single iteration (which in itself would be enough to produce a contradiction), we argued for an interpretation that would allow a contradiction to be declared at any iteration. This reading gives the nice result that the Likeness Regress may be read as a *reductio ad absurdum,* which seems to be in line with how Socrates and Parmenides treat it in the dialogue.

2.2.1 Two Difficulties

There are at least two difficulties that may be raised against this interpretation. The first stems from something seemingly unsatisfactory about the claim that a contradiction may be declared at any iteration of the regress. After all, if this is the case, then it is not clear why Parmenides would go to the trouble of constructing a regress. Why not point out that there is more than one Form, and be done with it? A regress is certainly dramatic; but it is also much more complex than simply pointing out that there is a contradiction at the first iteration.

[20]For example, Cornford explains how the regress may be generated, but then skips directly to how Socrates may avoid it (1939, 94); Miller simply describes the regress (1986, 59): Gill spends time distinguishing Reading A from Reading B, but does not explain why the regress under either reading is unacceptable (1996, 43–5). Both Allen and Sayre go a little further, with Allen raising the possibility that the result of an infinite number of Forms might be acceptable (1997, 183); and with Sayre suggesting that the regress itself is not a problem (1996, 88). But acceptable or not, problem or not, none of these commentators articulates the way in which the regress is a good reason (or not) to reject Socrates' thesis.

The second difficulty also has to do with the principle that each Form is one. In particular, it seems that additional Forms are numerically distinct from the initial Form, and so there may be no contradiction between the oneness of the initial Form and an infinite number of additional Forms. For example, if Helen resembles Beauty, then Helen also resembles Beauty_2, Beauty_3, and so on. But since each succeeding Form is numerically distinct from Beauty, it is difficult to see how this violates the oneness of Beauty.

Of course, we could come up with some account for why this is unsatisfactory. If resembling Beauty is equivalent to resembling Beauty_2, Beauty_3, ..., then it is no longer the case that Helen participates in Beauty by resembling it. Rather, she participates in Beauty only by resembling an infinite number of Forms. In order to use this to generate a contradiction, we might argue that a particular's acquiring the character of a Form by participating in an infinite number of Forms is theoretically untidy; or perhaps there is reason to believe that this is impossible according to one of Socrates' assumptions about Forms. These solutions seem somewhat speculative. Thus, we have reason to view with some skepticism the explanation that the regress functions as a *reductio* because it compromises the uniqueness of the Form.

Both of these difficulties will be solved if we can answer the question of what is so bad about Parmenides' regress. If we answer merely that an infinite number of Forms makes the regress bad, all we do is recognise that the regress requires us to abandon Socrates' thesis. But our answer will be more informative and more complete if it states not merely that the regress requires us to abandon Socrates' thesis, but why the regress requires us to do this (if the regress requires this at all). We shall approach the question in two stages. First, we shall look at a general theory of infinite regress arguments, together with a set of criteria that allow us to distinguish benign from vicious regresses. Second, we shall apply this theoretical machinery to Parmenides' regress, with a view to discovering whether we should reject Socrates' thesis on the grounds of the regress.

2.2.2 Infinite Regress Arguments

According to Tony Roy's treatment of infinite regress arguments,[21] a regress argument meets three criteria: adequacy, underlying and linking. These criteria are individually necessary and jointly sufficient for an argument being an infinite regress.[22] The chief value of analysing regress arguments according to these criteria is that they allow us to distinguish a benign regress from a vicious regress. We shall see that, on the assumption that the series is infinite, a regress is benign if and only if the premiss meeting the adequacy criterion is not contradicted by the conjunction of the premiss meeting the underlying criterion and the premiss meeting the linking criterion;[23] and a regress is vicious if and only if it is not benign.

Criterion of Adequacy

An argument meets the criterion of adequacy when there is a premiss that establishes the existence of a countably infinite R-series with irreflexive ancestral $^*R$, and the first member of the series is assumed to have some

[21]The literature on infinite regress arguments is quite sparse. The theoretical account in this section is based almost entirely on an unpublished draft paper of Roy's (dated October 14, 2002), which is the most complete theoretical treatment of which I am aware, and has concerns that overlap with this chapter. It should be noted that Roy's theoretical treatment of infinite regress arguments is not always tight (doubtless a sign of its status as a draft), and many questions are left open. Thus, we must keep in mind that the goal in this section is to develop a useful tool with which we can analyse a particular regress, not to work out a universal theory of regresses by which we can analyse every regress.

We should also note that Roy's account is not concerned with what might be called a generative regress (whereby the existence of a new member of a series is posited at every iteration), which might seem to be a serious mismatch with the Likeness Regress. Nevertheless, since we are assuming for the time being that the mere existence of an infinite number of Forms is not problematic, the generative aspect is trumped by the functional relation between members of the series — and it is precisely with respect to such functional relations that Roy's account is particularly illuminating.

[22]Roy does not say this explicitly, but it is implied by his presentation of a general theory. He hedges a bit in the conclusion (2002, 27): "it is hard for me to see how the view could be mistaken — or, at least, given some room to wiggle at the level of premisses, I think it will be difficult to generate and sustain straightforward counterexamples."

[23]We talk about "the premiss meeting ..." as opposed to "the premiss or premisses meeting ...," on the assumption that if there is more than one premiss required to meet a particular criterion, those premisses may be conjoined so that we have only one premiss.

property F.[24] This criterion is called "adequacy" because the question that arises of the R-series described by this criterion is whether the premisses that establish underlying and linking are adequate to account for the assumption that the first member of the series has property F.[25] For the purposes of our exposition, it is clear that there are three aspects to this criterion which must be explained: first, the nature of the R-series; second, what it means to have an irreflexive ancestral $^*R$; and third, what is the rôle of the first member that has property F.

First Aspect. The first aspect of the criterion of adequacy is that we have a countably infinite R-series. That is, we have a set whose elements can be paired off one-to-one with the set of natural numbers, and these elements are arranged in a single series related by the two-place relation R. At a minimum, we should expect that every element in the set is mentioned in the extension of "R"; furthermore, every element in the set must be connected to every other element of the set, either directly or indirectly. A pair of elements x and y are connected directly if and only if $\ulcorner <x, y> \urcorner$ or $\ulcorner <y, x> \urcorner$ appears as an ordered pair in the extension of "R." A pair of elements x and y are connected indirectly if and only if $\ulcorner <x, i_1>, <i_1, i_2>, <i_2, i_3>, \ldots <i_n, y> \urcorner$, or $\ulcorner <y, i_1>, <i_1, i_2>, <i_2, i_3>, \ldots <i_n, x> \urcorner$, appears in the extension of "R."

The distinction between direct and indirect connexion is easy to see diagramatically. In Figure 2.1 (cf. Roy 2002, 7), we have four diagrams representing four different sets of elements variously related by R. The elements appear as small circles; and the extension of "R" appears as arrows joining the circles (with the tail and head indicating the first and second member of each ordered pair). For example, in α, the domain is $\{d_1\}$,[26] and the extension of "R" is $\{<d_1, d_1>\}$; and in β, the domain is $\{d_1, d_2, d_3,$

[24]Roy describes the criterion of adequacy as follows (2002, 13): "for some property F and relation R with irreflexive ancestral $^*R$, there are *adequacy* premisses according to which there is an R-series whose first member is F." We have added the qualification that the R-series is infinite because, although Roy's theory is also concerned with finite regresses, our interest is exclusively in infinite regresses.

[25]Roy never explains his choice of names, but I base my speculation on his comment that, "a valid [sc. vicious] infinite regress argument arises when premisses imply that there is an R-series which is, and is not, adequate to some end" (Roy 2002, 13).

[26]In diagram α, call the only circle d_1.

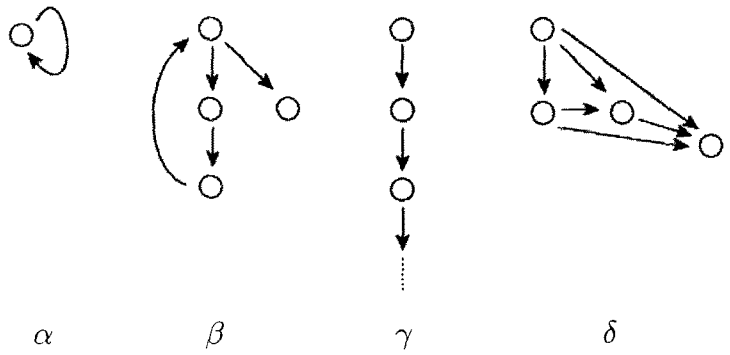

Figure 2.1: Elements Related by R

$d_4\}$,[27] and the extension of "R" is $\{<d_1, d_2>, <d_1, d_3>, <d_3, d_4>, <d_4, d_1>\}$. Now, in α, d_1 is connected directly to itself, since "Rd_1d_1" is true; and in β, d_1 is connected directly to d_3, since "Rd_1d_3" is true. (That is, there is a single arrow going from d_1 to d_1 in α, and a single arrow going form d_1 to d_3 in β.) Since "Rd_1d_4" is false in β, d_1 is not connected directly to d_4; but it is connected indirectly, since "Rd_1d_3" and "Rd_3d_4" are both true. (That is, there is a path along multiple arrows from d_1 to d_4.)

Hence, we can see why every element in the set must be connected either directly or indirectly to every other element in the set; for if this were not the case, we could have exclusive groups of elements (for example, a pair of elements that are connected directly to each other, but not to any other element in the set) resulting in multiple R-series within the set. All of the sets represented in Figure 2.1 have elements related in such a way that they are single series. But if we imagine a single set formed through the union of α and β, then we would have at least one element (d_1 in α) that is not related directly or indirectly to every other element in the union, resulting in multiple series.

Second Aspect. The second aspect of the criterion of adequacy is that the R-series must have irreflexive ancestral $^*R$. The extension of ancestral "*R" is a list of every direct and indirect connexion between elements of

[27] In diagram β, call the topmost circle d_1, and the circles directly below that d_3 and d_4; call the only circle in the branch to the right d_2.

the R-series.[28] Thus, the extension of $^*R$ in β is $\{<d_1, d_2>, <d_1, d_3>, <d_1, d_4>, <d_1, d_1>, <d_3, d_4>, <d_3, d_1>, <d_3, d_2>, <d_3, d_3>, <d_4, d_1>, <d_4, d_2>, <d_4, d_3>, <d_4, d_4>\}$. If we think of this in terms of diagrams, an ordered pair is part of the extension of "*R" if and only if there is a path along one or more arrows leading from the first element of the ordered pair to the second element of the ordered pair.

Having generated the extension of "*R" from the extension of "R" in this way, $^*R$ is irreflexive if and only if the extension of "*R" contains no ordered pair where the first member and the second member are the same. In diagrammatic terms, this means that there is no path along one or more arrows that leads from an element back to that element.[29] In Figure 2.1, the $^*R$ in α and β is not irreflexive, since "$^*Rd_1d_1$" is true in both cases. In contrast, $^*R$ is irreflexive in γ and δ, because there is no path that leads back to itself.[30]

Third Aspect. The third aspect of the criterion of adequacy is that the first member of the R-series is assumed to have property F. That there is a first member of the series simply means that there is one and only one element of the set that is the first member of some ordered pair in the extension of "R," but never the second member of any ordered pair in the extension of "R." That the first member has property F will turn out to be essential to our judgement of whether an infinite regress is benign or vicious. If the regress is benign, then the premisses meeting the criteria of underlying and linking occasion no contradiction with the assumption that the first member of the series is F; but if there is a *reductio* issuing from the assumption that the first member of the series is F, the regress is vicious.

The criterion of adequacy ensures that our argument has certain features

[28] In first-order logic (Roy 2002, 7, n. 12): "The *ancestral* $^*R$ of a binary relation R, is the relation such that (i) for any x and y, if Rxy then $^*Rxy$; (ii) for any x, y and z, if $^*Rxy$ and $^*Ryz$ then $^*Rxz$; and (iii) for no other x and y is in the case that $^*Rxy$."

[29] In first-order logic, "$\sim(\exists x)^*Rxx$".

[30] The requirement that $^*R$ be irreflexive is essential to any series being an infinite regress; for if it is not irreflexive, it opens up the possibility that the series may loop infinitely, without making reference to an infinite number of elements. This is a general case of a particular consideration in the previous chapter, where we modified (4) and (5) at each iteration — giving us (4', 4", ..., and 5', 5", ...) — in order to ensure that the additional Form that appears alongside is not a Form previously referenced by the regress.

that belong to all regress arguments. It is only met by a premiss that establishes a single R-series (i.e., all elements are connected directly or indirectly by R to all other elements) with a definite beginning (i.e., a first member) that neither loops (i.e., it has irreflexive ancestral $^*R$) nor terminates at a certain point (i.e., it is countably infinite), and whose first member is assumed to be F. Without these features, the series cannot form the basis of an infinite regress. For example, if $^*R$ is not irreflexive, then an argument may refer to an infinite number of elements, but not an infinite number of unique elements. And if there is no first element that is assumed to be F, then we have no grist for contradiction in the case of a vicious regress, or assumption to be confirmed in the case of a benign regress.

Criterion of Underlying

An argument meets the criterion of underlying when there is a premiss that establishes the properties, relevant to the argument, of the members of the series. These properties do not depend on a functional relation with other members of the series (with the possible exception of a reference to the order of a member in the series).[31] For example, if an argument were constructed on the basis of the series $\{1, 4, 9, 16, 25, \ldots\}$, a premiss that meets the criterion of underlying might be that each member is a natural number that is the square of its order in the series.

It is a problem to state what makes properties relevant to the argument. These properties vary by argument, and so what we need is an explanation that applies to arguments in general. Roy is silent on this point; but in many of the examples he considers, the property he cites picks out each member of the series as belonging to that series, to the exclusion of all others (cf. 2002, 15, 17, 19).[32] Thus, a possible explanation is that the relevant properties are those that uniquely identify members of the series. Thus, in the series above, we would expect the argument to make reference

[31] Roy says these properties "ordinarily" do not depend on a functional relation with other members (2002, 13), perhaps having in mind some exception that he does not mention explicitly.

[32] To be more precise, Roy does not talk about "relevant" properties at all, but simply mentions "some" properties (2002, 13): "There are *underlying* premises which specify some feature of the members." We speak of these properties as those that are "relevant to the argument" in an attempt to capture how Roy applies the criterion of underlying in specific cases (cf. 2002, 14-23), since it is clear from these examples that he does not mean just any property.

to the members being a natural number that is the square of its order in the series, not merely to the members being positive integers.[33]

Criterion of Linking

An argument meets the criterion of linking when there is a premiss that establishes the functional relation, relevant to the argument, between members of the R-series.[34] For example, if an argument were constructed on the basis of the relation between elements of a Fibonacci series, {0, 1, 1, 2, 3, 5, 8, 13, ...}, the premiss that meets the criterion of linking would be that $f(n) = f(n-1) + f(n-2)$ for $n > 2$. As before, there is difficulty in knowing which functional relation is the relevant one. For example, linking for the above series could be expressed as $f(n) \geq f(n-1)$, for $n > 1$. But speaking generally, the functional relation that is relevant is that functional relation which expresses how the members of the series are related to one another, but does not at the same time express how members of some other series are related to one another (where the functional relation in question is not identical).[35] In the case of $f(n) \geq f(n-1)$, for $n > 1$, we have an expression of how the members of the Fibonacci series are related to one another, but also of an infinite number of other series (such as {1, 1, 1, ...}); but $f(n) = f(n-1) + f(n-2)$ for $n > 2$ describes only the Fibonacci series.

2.2.3 Benign and Vicious Regresses

We shall now look at two sample regresses, with a view to showing how arguments meeting the three criteria operate, and how the criteria help

[33]There is some room to be flexible here, since it may be the case that more than one series could serve the same purpose, in which case the properties relevant to the argument would be those which describe such series but exclude all others. We may think of Parmenides' infinite regress as a prime example of this, since it works equally well with a beautiful particular followed by Beauty, Beauty_2, ..., as with a particular that is like followed by Like, Like_2, ...; but these sorts of details seem to complicate the issue unnecessarily.

[34]While most regress arguments only make reference to a single functional relation, presumably a complex argument could make reference to multiple functional relations between members.

[35]It may be possible for more than one such relation to be relevant in this way, but they would all be logically equivalent. For example, $f(n) = f(n+2) - f(n+1)$ also meets the criterion of linking for the Fibonacci series just cited.

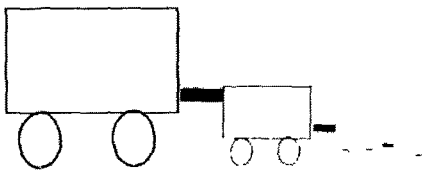

Figure 2.2: Infinite Series of Boxcars

us distinguish benign from vicious regresses. Suppose we have an infinite series of boxcars $\{b_1, b_2, \ldots\}$, with a relation R that joins each boxcar b_k to boxcar b_{k+1} on the right (cf. Roy 2002, 5, 24–5). Thus, the extension of "R" is $\{<b_1, b_2>, <b_2, b_3>, \ldots\}$. Furthermore, suppose that b_1 has a mass of 1 kilogram (kg) and a length of 1 metre (m), and that each succeeding boxcar is half the mass and half the length of the preceding boxcar (this gives us a train that has a finite mass and length, since the mass of the train approaches 2 kg as the number of boxcars approaches infinity, and the length of the train approaches 2 m as the number of boxcars approaches infinity; see Figure 2.2).

Given this information, we can calculate the acceleration of any boxcar b_k in terms of the force exerted on the train by pushing it from the left. or pulling it from the right. The acceleration of an object is equal to the force applied in newtons (N) divided by the mass of the object in kilograms ($\vec{a} = \frac{\vec{F}}{m}$); and acceleration is in the direction of the force. Thus, if we wish to calculate the acceleration of b_k, we need to know the force exerted on b_k and the sum of the mass of b_k and all the boxcars to the right or left of b_k (the reason we take into consideration all the boxcars to the right or left of b_k is because b_k does not move unless it pushes the boxcars in front of it, or pulls the boxcars behind it). If the train is being pushed from the left, then the force exerted on b_k is the total force exerted on the leftmost boxcar minus the sum total of the force with which b_1 through b_{k-1} resists (since for each force exerted on boxcar b_1 through b_{k-1}, that boxcar exerts a force of equal magnitude in the opposite direction). The sum of the mass of b_k and all the boxcars to the right of b_k is simply $\sum_{n=k}^{\infty} \frac{1}{2^{n-1}}$ kg. (In order to account for force and mass if the train is being pulled, we simply reverse references to left and right.)

Suppose that a force of 2 N is exerted on the leftmost boxcar. The sum of the mass of b_1 and all the boxcars to the right of b_1 is $\sum_{n=1}^{\infty} \frac{1}{2^{n-1}} =$

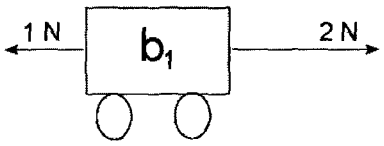

Figure 2.3: Force-body Diagram for Boxcar b_1

$1 + \frac{1}{2} + \frac{1}{4} + \ldots = 2$ kg (that is, the mass of the entire train). Thus, the acceleration of b_1 is 1 metre per second squared (m/s^2). But b_1 itself only has a mass of 1 kg, and so the force it exerts to the left as it is accelerated to the right is its mass multiplied by its acceleration ($\vec{F} = m\vec{a}$), which is 1 N. Therefore, the net force exerted on b_2 is the total force (2 N) minus the force b_1 exerts in the opposite direction (1 N), as exemplified by the annotated force-body diagram in Figure 2.3. Hence, the net force exerted on b_2 is 1 N.

Given that a force of 1 N is exerted on b_2, we may calculate the acceleration of b_2. The sum of the mass of b_2 and all the boxcars to the right of b_2 is $\sum_{n=2}^{\infty} \frac{1}{2^{n-1}} = \frac{1}{2} + \frac{1}{4} + \ldots = 1$ kg. Thus, the acceleration of b_2 is 1 m/s^2. Since b_2 itself has a mass of $\frac{1}{2}$ kg, it exerts a force of $\frac{1}{2}$ N in the direction opposite to the direction of acceleration, and so the net force exerted on b_3 is $\frac{1}{2}$ N. Continued calculations will reveal that under these conditions, each boxcar b_k will accelerate to the right at 1 m/s^2. But this is exactly what we should expect, since if the whole train has a mass of 2 kg, and 2 N is applied to the leftmost boxcar, the whole train accelerates at 1 m/s^2.

A Benign Regress

From the description thus far, we can already see how the criteria of underlying and linking would be met by an argument involving the infinite series of boxcars. The criterion of underlying would be met by the specification of the mass and length for each boxcar in the series, and by the force of 2 N exerted on the leftmost boxcar, in a direction from left to right (we shall assume a force of magnitude 2, so that we do not have to do any additional calculations). The criterion of linking would be met by the specification that there is a transference of force from each boxcar to the boxcar on the right (in the case of pushing from the left), or from each boxcar to the boxcar on the left (in the case of pulling from the right).

The criterion of adequacy would met by the recognition that we have a countably infinite R-series of boxcars, with irreflexive ancestral $^*R$ (no boxcar is connected to itself either directly or indirectly) and a first element (b_1) with an assumed property F. Now, suppose that we want to demonstrate that our train does not move to the right. This completes adequacy by providing us with a property F; that is, that the acceleration of b_1 is greater than 0 m/s^2 to the right.[36]

As we can see by our calculations above, if there is a 2 N force exerted on the leftmost boxcar, b_1 accelerates at 1 m/s^2. Indeed, any given boxcar b_k accelerates at 1 m/s^2. Thus, there is no contradiction between the assumed property F of b_1 (namely, that acceleration to the right is greater than 0 m/s^2), and the conjunction of premisses that meet the criteria of underlying and linking. In this way, the regress is benign, and we are not able to demonstrate that the train does not move to the right.

A Vicious Regress

Suppose that the premisses that meet the criteria are the same as above. with the exception that instead of a force of 2 N being exerted on the leftmost boxcar, in a direction from left to right, a force of 2 N is exerted on the rightmost boxcar, in a direction from right to left. Further, suppose that we want to demonstrate that our train does not move to the left with an acceleration of 1 m/s^2. Again, this completes adequacy by providing us with an assumption for property F; that is, the acceleration of b_1 is 1 m/s^2 to the right.

This time, we shall be able to demonstrate that the train does not move to the left, because we have a vicious regress. The problem is that for force to be exerted, it must be applied to a particular boxcar. If we look for a rightmost boxcar on which to apply force, we cannot pick out a particular boxcar, because there is no rightmost boxcar in the infinite series. But this means that the acceleration of b_k is 0 m/s^2, because no force applied to any boxcar b_k. This contradicts the assumption that b_1 accelerates at 1 m/s^2.

[36]One might raise the question of why the acceleration of b_1 is property F, as opposed to some other property, such as the force of 2 N exerted on b_1. Property F is always part of what we are attempting to demonstrate in the argument. In this case, we take as a given that there is a force of 2 N exerted on b_1; but what we are attempting to demonstrate is that the train accelerates to the right. Thus, F must be acceleration to the right.

We might seek to get around this problem by unhitching the train between some boxcar b_j and b_{j+1} where j is large, thus making b_j the rightmost boxcar. But this would mean that the total mass of b_j and all the boxcars to the left of b_j is something less than 2 kg (for the total mass of the train is 2 kg only with an infinite number of boxcars); and so a force of 2 N would accelerate any boxcar b_k (where $k \leq j$) at greater than 1 m/s^2. Hence, we have a contradiction with the assumption that b_1 accelerates at 1 m/s^2. In this way, it is clear that there is a contradiction between the premiss that meets adequacy and the premisses that meet underlying and linking. And so, we are able to prove, by means of a vicious regress, that b_1 does not accelerate at 1 m/s^2.

According to Roy, what we have observed in the benign and vicious regresses just described is typical (2002, 20). In the benign regress, the assumption that b_1 accelerates at greater than 0 m/s^2 is not contradicted by the conjunction of premisses that meet underlying and linking: the force applied to b_1 is such that b_k accelerates at 1 m/s^2, which does not contradict b_1 accelerating at greater than 0 m/s^2. In contrast, the assumption of the vicious regress, that b_1 accelerates at 1 m/s^2, is contradicted by the conjunction of premisses that meet underlying and linking: there is either too little or too much force applied, supplying grist for contradiction.

2.2.4 Application to the Likeness Regress

The regress of the Likeness Regress is a good deal more complex than an infinite series of boxcars, but the theoretical machinery just discussed will help us determine whether the regress is benign or vicious. The first difficulty we encounter is how the premisses of the Regress meet the criterion of adequacy. It is clear that Parmenides furnishes us with an infinite series, beginning with a first member (the particular) and followed by an infinite number of Forms. Now, for the sake of simplicity, we shall omit the particular from our analysis, making the first Form the first member of the series (Forms are treated just like particulars for the purposes of resemblance anyway). Thus, we have a series comprising an infinite number of Forms: $\{f_1, f_2, f_3, \ldots\}$. But even with this simplification, how to construe R is not immediately obvious.

The reason for this is that if we do not distinguish between resemblance that obtains between two Forms, and the resemblance that stands in for

participation, we get a series of Forms related by R with ancestral $^*R$ that is not irreflexive. Though we apply the same predicate "R" to both relations, they play different rôles in the construction of the regress, and so must be distinguished in our analysis. Here are the essential parts of the account of the regress in the previous chapter, Reading A:

> (c) Since u resembles x and x resembles u, then there is some additional Form y in virtue of participation in which x and u resemble one another.
> (d) If u participates in y and x participates in y, then u resembles y and x resembles y.

According to this analysis, the resemblance relation holds between u and x, between x and u, between u and y, and between x and y. But it is clear that if R includes all these instances of resemblance, no ancestral $^*R$ can possibly be irreflexive, since R itself is not asymmetric (given that resemblance holds between u and x, and between x and u).

The mistake in this conception is that not all resemblance relations are created equal: we are not interested in just any resemblance relation when describing the R-series, but rather that resemblance relation that is the basis on which the regress is generated (that is, the relation that makes reference to a new member in the series). As such, we are interested only in the resemblance relation that stands in for participation. According to (c), f_k and f_{k+1} resemble one another; but in order to explain this resemblance, we postulate a new Form f_{k+2} in which both f_k and f_{k+1} participate. The reference to a new member, f_{k+2}, is the key to the construction of the infinite R-series (for it is in virtue of referring to a new member that the series is infinite). Therefore, it is the resemblances that hold between u and y, and between x and y, that indicate the structure of the R-series; and such a series does have irreflexive ancestral $^*R$. Figure 2.4 is a diagram of this series, with the circles from left to right representing f_1, f_2, f_3, ..., and the arrows representing the R relations. According to this diagram, the extension of "R" is $\{<f_1, f_3>, <f_2, f_3>, <f_2, f_4>, <f_3, f_4>, <f_3, f_5>, <f_4, f_5>, \ldots\}$, which means that $^*R$ is indeed irreflexive.

One might raise an objection about how the extension of "R" is construed. Perhaps Parmenides' point in the regress is that each pair resembles an infinite number of Forms, so the extension of "R" is $\{<f_1, f_3>, <f_2, f_3>, <f_1, f_4>, <f_2, f_4>, <f_1, f_5>, <f_2, f_5>, \ldots, <f_2, f_4>. <f_3, f_4>, <f_2, f_5>, <f_3, f_5>, <f_2, f_6>, <f_3, f_6>, \ldots, \ldots\}$. This is a possible interpretation for

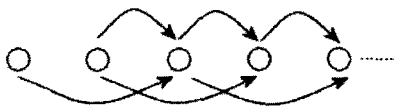

Figure 2.4: Infinite Series of Resemblance

R; but it makes no difference to the irreflexivity of $^*R$. What it does do is make the regress seem more extreme: it is not merely that there are an infinite number of Forms, but that a given participant participates in an infinite number of Forms. But since the more expansive extension of "R" complicates matters somewhat, in a way that does not seem necessary, we shall set aside this interpretation for the time being. (Indeed, we shall see when we return to it that this interpretation does nothing to change the benignity or viciousness of the regress.)

We might think that the assumption of property F required to complete adequacy is the resemblance relation itself (which would require us to adjust our theoretical account, since a relation is not a property), since it is in virtue of resemblance that we posit participation in an additional Form. But we know from our investigation into the nature of resemblance that two objects in the domain do not simply resemble one another; they resemble one another with respect to some character. Therefore, F is none other than that character with respect to which a particular resembles the first Form in the series. For example, if the regress begins with Helen resembling Beauty, it is the character of beauty that stands in for F.

Our account of the premiss that meets the criterion of underlying is straightforward. This premiss is a statement of all the features that belong to the Forms in virtue of which they are Forms, in the context of the argument. Socrates does not catalogue these in the Likeness Regress, but it is clear that Forms are separate (130b1–3), that they are each one (129b7), that they are that in virtue of which particulars acquire certain characters and that Forms themselves have the characters that the particulars acquire (128e12–9e5), and so on.

How the criterion of linking is met is the single most important element in our analysis of the Likeness Regress, for depending on how we construe linking, the regress is either benign or vicious. Consider Parmenides' own description of the regress (132e6–7):

> Then it is not possible for something to be like the Form, or for

> the Form to be like another; otherwise alongside the Form there will always appear another Form.

Parmenides imagines a situation where there is a resemblance between f_1 and another object in the domain. Let us suppose f_1 is Beauty and this Form resembles Helen. This resemblance permits the inference that f_2 appears alongside f_1; and we may add that both f_1 and Helen resemble f_2. And since f_1 resembles f_2, f_3 appears alongside f_2, and both f_2 and f_1 resemble f_3; and so on. At each step, resemblance is with respect to the character of beauty, so Helen is beautiful, as are an infinite number of Forms.

On the basis of this, we may construe linking as met in the following way: for any pair of Forms f_k and f_{k+1}, if they have the same character, then there is an additional Form, f_{k+2}, that also has that character. However, according to this construal of linking, the conjunction of underlying and linking does not contradict adequacy. On the supposition that Helen is beautiful, we end up with an infinite number of beautiful Forms. But just as with the train, where the entire train accelerates when force is exerted, so too with Helen's beauty, that initial character is propagated to Beauty, and thence to an infinite number of Forms beyond. Therefore, the regress seems to be benign.

Nevertheless, there seems to be an error of omission in this interpretation. In our analysis of the regress above, (c) states not merely that, due to resemblance between u and x, there is some additional Form y that both u and x resemble; rather it states that u and x resemble one another *in virtue of* their both resembling y. It is this move — this causal assertion suggested by "in virtue of" — that corrupts an otherwise benign regress. That is, u and x resemble one another; but they only do so because both of them resemble y. But this changes the way linking is met in a significant way; for now Helen resembles Beauty only if there is some additional Form which both Helen and Beauty resemble.

According to these considerations, linking is met as follows: for any pair of Forms f_k and f_{k+1}, they have the same character only if there is some additional Form, f_{k+2}, that also has that character. But now the premiss that meets adequacy does contradict the premisses that meet underlying and linking. According to adequacy, Helen is beautiful. But according to linking, Helen is beautiful only if Beauty and the infinite number of Forms that follow have the character of beauty. Moreover, any given Form in the series is only beautiful if a Form further along in the series is beautiful. But

if there is no Form in the series which is beautiful in itself, and not in virtue of some further Form, no Form is beautiful. Just as with the train, where the acceleration of the initial boxcar depends on but cannot be accounted for in terms of the force that is exerted on other members of the series, so too Helen's beauty depends on but cannot be accounted for in terms of the beauty of the Forms in the series.[37] Therefore, we have a contradiction between adequacy and the conjunction of underlying and linking.

This gives us the answer to the question of what is so bad about Parmenides' regress, and it is an answer that at the same time gives substance to the intuition that an infinite number of Forms is an intolerable state of affairs. The regress portion of the Likeness Regress describes a situation where particulars do not have any character at all. Particulars acquire the characters they have by resembling Forms; but in order to resemble a given Form, the Form in question must have some character. Yet the regress demonstrates that the Form does not have any character, since the Form's having some character depends on an infinite number of Forms having that character — and this never obtains. Therefore, Socrates' attempt to explain how particulars have the characters they do in terms of resembling Forms falls flat, because on his account, this very relation of resemblance turns out to be impossible.

2.2.5 Loose Ends

There remain two loose ends which we should consider. First, we need to substantiate our earlier suggestion that participation in an infinite number of Forms makes no difference with respect to the regress being benign or vicious. Second, we need to look at how Reading B changes the mechanics of the regress.

Infinite Participation

As mentioned above, a possible interpretation of the regress is that each participant participates in an infinite number of Forms. This reading seems

[37]Vlastos' account of the infinite regress portion of the Largeness Regress is similar, in that he recognises a simple multiplicity of Forms is not enough to establish the regress as vicious (1955, 440). The regress turns vicious for Vlastos on epistemological grounds: in order to apprehend the particular as having a certain character, we need to have known an infinite number of Forms with that character (1965a, 261–2).

anything but forced, given that Socrates explains participation in terms of resemblance. If Helen and Beauty resemble one another, both Helen and Beauty participate in Beauty_2; and since participation is explained in terms of resemblance, both Helen and Beauty resemble Beauty_2. According to our usual interpretation, since Beauty and Beauty_2 resemble one another, both Beauty and Beauty_2 participate in Beauty_3; and so on. There is no reference to Helen here; but there is no reason we could not have such a reference. Instead of saying "since Beauty and Beauty_2 resemble one another, both Beauty and Beauty_2 participate in Beauty_3," we could say "since Helen and Beauty and Beauty_2 all resemble one another, Helen and Beauty and Beauty_2 all participate in Beauty_3." By extending this pattern and generalising from this particular case, we may argue that any participant participates in an infinite number of Forms.

If participants participate in an infinite number of Forms, this changes the way the criterion of adequacy is met. As pointed out, the extension of "R" becomes $\{\langle f_1, f_3\rangle, \langle f_2, f_3\rangle, \langle f_1, f_4\rangle, \langle f_2, f_4\rangle, \langle f_1, f_5\rangle, \langle f_2, f_5\rangle, \ldots, \langle f_2, f_4\rangle, \langle f_3, f_4\rangle, \langle f_2, f_5\rangle, \langle f_3, f_5\rangle, \langle f_2, f_6\rangle, \langle f_3, f_6\rangle, \ldots, \ldots\}$; and such an extension preserves the irreflexivity of ancestral $^*R$. The property F is still that character in virtue of which a particular resembles the first Form in the series. And it turns out that the regress is still vicious. Given that the initial Form does not have the character it does except in virtue of resembling an infinite number of Forms that have that character, the contradiction between adequacy and the conjunction of underlying and linking manifests itself rather dramatically. As before, no Form has the character in question unless there is a Form in the series that has the character it does in virtue of itself, and not in virtue of some further Form in the series. Since none of the infinite number of Forms meets this criterion, the initial Form does not have the character in question. Therefore, participation in an infinite number of Forms does not change the viciousness of the regress.

Reading B

Recall that the second reading of the regress states that a resemblance between two objects in the domain indicates that they participate in the Like (as opposed to some other Form that corresponds to a certain character in virtue of which the pair of objects resemble one another). Here is our analysis from the previous chapter:

(c) Since u resembles x and x resembles u, then there is some additional Form y (where y is the Like) in virtue of participation in which x and u resemble one another.
(d) If u participates in y and x participates in y, then u resembles y and x resembles y.

This has certain implications for adequacy, since the regress functions with respect to the relation of likeness, as opposed to a character. The technical problem that crops up for our theoretical account is that the criterion of adequacy clearly requires the assumption that the first member of the series has a property F, and relations are not properties.

We could rework our theoretical account of infinite regresses to account for this, but perhaps it is better to solicit some help from Leibniz. Leibniz distinguished three ways that a pair of lines may be related (1973, 232, trans. M. Morris):

> As a ratio of the greater L to the smaller M, as a ratio of the smaller M to the greater L, and lastly as something abstracted from both of them, that is to say as the relation between L and M, without considering which is the anterior and which the posterior, which the subject and which the object.

The first two ways treat relations as characters, insofar as the greater belongs to L, and the smaller belongs to M; and no error is made, since the greater is related to M and the smaller to L. The third way is our customary way of considering relations, as subsisting between the two objects in question; but there is no necessity to construe relations in this fashion.

Thus, we can get around this problem by construing the relation of likeness as a property: the Like has the character of being like with respect to the particular. And Like_2, in which both the particular and the Like participate, has the character of being like with respect to the particular on the one hand, and with respect to the Like on the other. Of course, this raises the issue of a character that changes: Like and Like_2 seem not to have the same character, since each is like with respect to different objects. But we can get around this by arguing that both Like and Like_2 are like some object with respect to having a character of likeness — which means that both Like and Like_2 will have the same character. Thus, once we express the the relation of likeness in terms of a corresponding property, Reading B does not upset the main points of our analysis.

2.3 Conclusion of Exposition

In this chapter, we have dug more deeply into the Likeness Regress by filling in the details of resemblance, by arguing for a revised account of Socrates' thesis, and by analysing the mechanics of the regress portion of the argument. Combined with our work in the first chapter, this completes our detailed exposition of the argument. What follows is a brief reiteration of our findings.

First, we have a valid argument-form on either Reading A or Reading B of the argument. While reasons for preferring Reading A are perhaps stronger, there is no definitive way to choose between these readings. It seems entirely plausible that Plato constructed the argument so as to permit both readings simultaneously; and which one we choose does not matter insofar as the upshot of the argument is concerned.

Second, the reason we have a valid argument-form is that Socrates' thesis leads to a contradiction in the form of an infinite regress. This regress is vicious, because it involves a contradiction between the particular's resembling the Form with respect to some character and the impossibility of the Form's having that character.

Up to this point, we have been eager to reconstruct the Likeness Regress as accurately as possible, and as charitably as possible. Socrates makes certain admissions, these admissions allow Parmenides to generate an infinite regress, and the regress leads to a contradiction. Parmenides' position is strong; his argument works. But what remains to be seen is whether Socrates ought to have allowed Parmenides to draw these admissions out of him. In the next chapter, we shall attempt to work out a conception of resemblance — one that denies that resemblance is symmetrical and so preserves Socrates' thesis while providing a basis for rejecting the regress.

Part II

Analysis

Chapter 3

Analysis of Resemblance

The first two chapters have established a baseline interpretation of the Likeness Regress. It is clear that in his eagerness to account for participation in terms of resemblance, Socrates is refuted rather spectacularly by Parmenides - given the premisses of the argument. But whether Socrates should have accepted those premisses is another matter entirely. It is the purpose of this chapter to see what modifications might be made to the premisses of the argument that could foil Parmenides' attack; and to this end, we shall be concentrating almost exclusively on developing a different conception of resemblance. Modifying the conception of resemblance is a traditional move offered up as a defence of Socrates. But as we move through various conceptions that have been offered, it will become obvious that we need to move beyond these conceptions to rescue Socrates from the Regress.

3.1 Defending Socrates

Commentators defend Socrates on the grounds that Parmenides (perhaps intentionally) misconstrues resemblance. There are two basic tacks. The first is to argue that resemblance is not symmetrical without qualification, but rather that certain aspects of resemblance are asymmetrical. Thus, when Parmenides asserts that resemblance is symmetrical in (3),[1] he misconstrues resemblance by focussing on a single aspect of resemblance, and makes trouble for Socrates on the basis of this simplification (cf. Pro-

[1] $(\forall x_f)(\forall u_d)(Rux \rightarrow Rxu)$

clus IV, §§911-2; Gill 1996, 42; Miller 1996, 56). The second tack is to argue that the character the particular acquires in virtue of participating in a Form is not the same as the character of the Form. For example, Helen and Beauty are both beautiful, for Helen participates in Beauty. But the beauty of Helen is different in kind from the beauty of Beauty. Parmenides maintains that the Form and the particular participate in a third Form, in (4)[2] or (5),[3] because the Form and the particular have the same character; a condition which necessitates a third Form in virtue of which the Form and the particular have the same character. But this misconstrues resemblance, because the character of the Form and the character of the particular are different in kind. and so it is not necessary to postulate a third Form.

The difference between these two tacks is more than just the point at which the Regress is stayed. Those who hold that certain aspects of resemblance are asymmetrical, typically do not deny that the character of the Form and the character of the particular are the same; rather the asymmetrical aspect of the relation arises from the dependence of the particular on the Form. In contrast, those who hold that the character of the Form and the character of the particular are different in kind, typically ignore any aspect of dependence, arguing instead that such a difference is sufficient for asymmetry. There are variations on these tacks; and whether either is successful, both are successful, or they are successful in combination, has yet to be determined. But almost every defence of Socrates that has been proposed in the literature hitherto has elements of these strategies.

3.2 Words for "Resemblance"

If Parmenides does indeed misconstrue resemblance, we might expect Plato to indicate this. In fact, Plato does drop what might be called a significant linguistic clue, which comes into focus when we look at the words used in the passage to express or imply resemblance. Nevertheless, as we shall see, we cannot draw any definitive answers from such evidence. Table 3.1 lists the words introduced by Socrates.[4] Of the three words Socrates uses

[2] $(\forall u_d)(\forall v_d)[(Ruv \;\&\; Rvu \;\&\; u \neq v) \rightarrow (\exists x_f)(Mux \;\&\; Mvx \;\&\; x \neq u \;\&\; x \neq v)]$

[3] $(\forall u_d)(\forall v_d)[(Ruv \;\&\; Rvu \;\&\; u \neq v) \rightarrow (Mul \;\&\; Mvl \;\&\; l \neq u \;\&\; l \neq v)]$

[4] I do not include παραδείγματα (132d2) in the list, because this word need not express or imply resemblance (although it is certainly no surprise to see it appear in Socrates' thesis). Furthermore, I do not include ἔοικεν (133a7), since it is not employed as a word

Table 3.1: Socrates' Words for "Resemblance"

ἔοικα – *to resemble*[a]	ὁμοίωμα – *[a] likeness*	εἰκάζομαι – *to resemble*
ἔοικεναι (S, d3)	ὁμοιώματα (S, d3)	εἰκασθῆναι (S, d4)
ἔοικεν (P. d6)		εἰκασθέντι (P, d7)

[a]Table 3.1 and Table 3.2 groups words according to their lexical entries in the *LSJ* (with the exception of εἰκάζομαι, since the active meaning is different from the passive meaning). I have included a possible English translation of each word, which corresponds to the word used in the initial translation of the passage in Chapter 1. Besides each word in parenthesis is an indication of whether the word is Socrates' ("S") or Parmenides' ("P").

to express his thesis (132d3-4), only two are picked up by Parmenides in his immediate response (he avoids ὁμοίωμα, d3), and Parmenides avoids them altogether in the ensuing argument (d7-a7). In order to do this, Parmenides introduces three new words: ὅμοιον (d7); ἀφωμοιώθη (d7); ὁμοιότητι (a5); we can see these in Table 3.2. What is particularly striking about these tables is that they show a clear shift in terminology. Even if we think Plato is not careful about his choice of words, it would be difficult to conclude that this shift away from Socrates' chosen words is accidental.

Nevertheless, recognising that there is a shift in terminology is quite different from ascribing a particular meaning to that shift. One possibility is that the words introduced by Socrates suggest an ontological dependence of that which resembles on that which is resembled; which is to say that that which is resembled is prior by nature to that which resembles.[5] For example, the red scarf around my neck is prior by nature to a reflexion of my red scarf in a mirror; for the scarf around my neck may exist without the mirror image, but the mirror image may not exist without the scarf around my neck. Priority by nature is an asymmetrical relation. And so, if the words Socrates uses to express resemblance between Forms and particulars suggest priority by nature, those who argue that Parmenides misconstrues resemblance by ignoring the dependence of particulars on Forms may well have a point. The difficulty with this move, as we shall see, is that Socrates' words appear just as open to a symmetrical interpretation as Parmenides'.

The strongest piece of evidence for a priority-by-nature thesis is a mark-

for resemblance, but rather as a confirmation.

[5]By "*a* being prior by nature to *b*," I mean that object *a* can exist without object *b*, but *b* cannot exist without *a* (cf. Aristotle *Met.* Δ11, 1019a3-14).

Table 3.2: Parmenides' Words for "Resemblance"

ὅμοιος – *like*	ἀφομοιόω – *to be like to*[a]	ὁμοιότης – *likeness*
ὅμοιον (P, d7)	ἀφωμοιώθη (P, d7)	ὁμοιότητι (P, a5)
ὅμοιον (P, d7)		
ὅμοιον (P, d8)		
ὁμοίῳ (P, d8)		
ὅμοιον (P, d8)		
ὅμοιον (P, d10)		
ὁμοίῳ (P, d10)		
ὅμοια (P, e3)		
ὅμοια (P, e3)		
ὅμοιον (P, e6)		
ὅμοιον (P, a1)		
ὅμοιον (P, a3)		

[a]While ἀφωμοιόθη (P, d7) is etymologically related to ὁμοιώματα (S, d3) (since the former is the preposition ἀπό prefixed to the verb ὁμοιόω), it is unlikely that Parmenides intends ἀφωμοιόθη as a verbal parallel to ὁμοιώματα. The reason for this is that a verbal parallel, namely ὁμοιώθη, is available to him; but he chose not to use it.

ed contrast between Socrates' word ὁμοιώματα (132d3) and Parmenides' repeated employment of forms of ὅμοιος (d7, d7, d8, d8, d8, d10, d10, e3, e3, e6, 133a1, a3). Although *ὁμοίωμα* is infrequent in the dialogues, it clearly implies priority by nature. For example, souls are amazed when they discern some likeness of visible objects to Forms (ὁμοίωμα, *Phdr.* 250a6); and a name is said to be a likeness of that of which it is a name (ὁμοιώματι, *Crat.* 434a1). Visible objects in the *Phaedrus* are dependent on Forms for their existence, and names in the *Cratylus* come after that of which they are names; so it is clear that there is an asymmetrical aspect to Socrates' chosen word.

In contrast, the word Parmenides most favours, ὅμοιος, suggests symmetry. For example, Aristophanes describes creatures with two faces that are exactly alike (ὅμοια, *Smp.* 190a1); Timaeus imagines a sphere divided into equal and like parts (ὅμοια, *Ti.* 55a4); and Socrates says that like is not friend to like (ὅμοιον, *Ly.* 216b8). But if the first face is like the second face, the second must be like the first; and if a sphere's parts are equal and like, they must be like each other; and the phrase "like is not friend to like"

implies that the two objects described as like are like each other. In all of these cases, the relation in question is attributed to the pair of objects directly, which suggests the relation is symmetrical.

Unfortunately, the other words used in the Regress do not follow suit. For example, reflexions or shadows resemble visible objects (ἔοικεν, *R.* 510a5); geometers use visible diagrams, but think about that which the visible diagrams resemble (ἔοικε, *R.* 510d7); and a ruler resembles the condition of the city that he rules (ἔοικεν, *R.* 579e6). A reflexion or shadow is clearly posterior by nature to the visible object, and so are diagrams to geometric objects; and a ruler must have a city in order to be described as a ruler of a certain sort. From this evidence, we might conclude that ἔοικα involves priority by nature; but this does not hold for all instances of the word. For example, Alcibiades claims that Socrates resembles the Satyr Marsyas (ἐοικέναι, *Smp.* 215b4); Socrates wonders what the nature of the soul resembles (ἔοικεν, *Phd.* 80a7); and the poet is said to resemble the painter in making inferior creations (ἔοικεν, *R.* 605a10). But the respect in which Socrates resembles Marsyas is a respect in which Marsyas resembles Socrates; that which the soul resembles resembles the soul in the same respect; and if the poet resembles the painter in making inferior creations, then the painter also resembles the poet.

Hence, an analysis of the words Socrates and Parmenides use to express resemblance does not lead to any definitive answers. We cannot assert, solely on the strength of the language Socrates and Parmenides use, that Socrates' understanding of resemblance is asymmetrical whereas Parmenides' is symmetrical. But there is an undeniable terminological shift in the Regress; and so it seems quite plausible that Plato is pointing to the resemblance relation as the source of Socrates' difficulties, and is prompting us to investigate different conceptions of resemblance in order to discover what has gone wrong in the argument.

3.3 Forms as παραδείγματα

The key to the different conceptions of resemblance is a consideration of the rôle played by a word that has been hitherto ignored: παραδείγματα. Take the case in which a bed is the παράδειγμα of a picture of a bed; and the case in which a blueprint is the παράδειγμα of a wall. The resemblance that obtains between the bed and the picture is fundamentally different from

that which obtains between the blueprint and the wall. This is because the painting resembles the bed with respect to appearance (assuming that the painting is realistic), whereas the blueprint does not resemble the house with respect to appearance. Thus, we should isolate the various senses of παράδειγμα and use the distinctions between these senses as a guide for investigating the different conceptions of resemblance.

There are many senses of παράδειγμα, but not all are relevant to the Regress.[6] For example, Plato often uses the word to mean an exemplar (e.g., *Grg.* 525c2; *Sph.* 218d9). But this sense of παράδειγμα is not relevant to our present argument, since Forms are not illustrative of general principles, but rather are that in virtue of which particulars have the character they do. The question we shall ask, in order to determine the relevance of a given sense of παράδειγμα, is whether it might help us to formulate a reply to the problem which Socrates' thesis sets out to solve. Recall that Socrates proposes that "Forms are παράδειγματα in nature" (132d1-2) in order to respond to the difficulty that is created when we suppose that many particulars participate in one and the same Form - namely that we need to explain how many particulars may participate in one Form without compromising the oneness of the Form. Looking back at exemplars, it is clear that they do not provide a solution to this "problem of the one and the many," because exemplars do not explain how many particulars may participate in one Form.

There are two senses of παράδειγμα that do appear to offer solutions to the problem of the one and the many. The first sense takes παραδείγματα to be models (cf. Patterson 1985, 13-6). A model has the same character as that which is modelled on it, or one similar to it. For example, if one length is modelled on another length, the first is the same as or similar to the second with respect to length. This potentially solves the problem of the one and the many because many particular lengths may be modelled on the model. The second sense takes παραδείγματα to be patterns (cf. Patterson 1985, 16-9). The difference between a model and a pattern is that a pattern does not necessarily have the same character as that of which it is a pattern. For example, a blueprint that articulates the structure of a wall does not have the same character as the wall itself, and the formula of a circle does not have the same character as the circle drawn in accordance

[6]See R. Patterson on the various uses of παράδειγμα (1985, 11-23). I use his catalogue as a basis for the senses and citations in what follows.

with that formula. This potentially solves the problem of the one and the many because many walls may be constructed from the same blueprint, and many circles drawn according to the same formula.

Models subdivide into two groups. For the first group of models, the model is an original on which a copy is based, in virtue of which we have an original-copy relation. We shall explore this relation by considering the painting of a bed (where the bed of the craftsman is the original, and the painting of the artist is the copy) and the image of my scarf in the mirror (where the scarf around my neck is the original, and the mirror-scarf is the copy). For the second group of models, the model is a standard on which an instance is based, in virtue of which we have a standard-instance relation. We shall explore this relation by considering the Standard Kilogram (where the Standard Kilogram at the *Bureau International des Poids et Mesures* is the standard, and the shopkeeper's kilogram-weight is the instance).

Patterns subdivide into two groups.[7] For the first group of patterns, the pattern is a series of instructions that, together with a set of rules. may be followed in order to bring about the result at which the instructions are aiming. We shall investigate this instructions-result relation by considering a musical score (where the musical score is the series of instructions, and the music is the result at which the musical score is aiming). For the second group of patterns, the pattern is an original formula to which a non-identical linear transformation has been applied. We shall investigate this original-transformation relation by considering a circle (where the circle has a formula of $x^2 + y^2 = 1$ on a Cartesian plane, and the linear transformation is the ellipse that results from a horizontal stretch).

3.3.1 Models

Original-copy relation: Painting of a bed.

In the *Republic*, Socrates declares that a painter is an imitator (597e1-2), and a good painter can deceive children and fools into thinking that his creations are real (598c1-4). Thus, the first original-copy relation we

[7]There are other possibilities for patterns than the ones mentioned below, such as orthographic projections (of which the blueprint of a wall, mentioned above, is an example). But as we shall see, the essential move in our treatment of patterns is made on the basis of a feature that belongs to all patterns in virtue of which they are patterns, and not on the basis of a feature belonging to a particular group of patterns.

shall consider is a painting of a bed, according to Socrates' description in the *Republic*. There are a couple of assumptions which should be set down about this painting. First, the painting is a realistic painting. If this were not so, but the painting were abstract or impressionist, it would be difficult to suppose that even children or fools could be deceived into thinking the painting of a bed was actually a bed. Second, the painting is viewed from afar (as Socrates suggests, 598c2), since neither the child nor the fool will be deceived if the end of the canvass is noticed.

The resemblance[8] that obtains between the painting of the bed and the bed is only a qualified resemblance, since the medium forces a multitude of restrictions on the artist. For example, the artist represents the bed from a single perspective (whereas the far side of the bed is visible when we walk around), the method by which the paint is applied leaves its mark (whereas the bed is not composed of brushstrokes), and the canvass has no depth (whereas the bed is not flat). With this in mind, we might think that the painting of the bed does not resemble the bed at all, but merely symbolises or denotes it in some way. But this cannot be if children and fools are to be deceived into thinking the painting is real.

Assuming Socrates' claim about possible deception is correct, the painting at a distance must appear to be the same as the bed. Furthermore, since the artist is restricted to a single visible aspect of the bed, we may infer that the shape and the colour of the bed in the painting are central to creating the illusion of a real bed. But this means that the resemblance that obtains between the bed and the painting is due to the bed in the painting appearing to have the same character as the bed. For example, if the bed is large and metallic, then the bed in the painting must also appear to be large and metallic. This is quite similar to our definition of resemblance, which stated in part that object a resembles object b only if there is some common character that both a and b have. By modifying this account, so that resemblance obtains when the painting *appears at a distance* to have some common character with the original (or perhaps even *appears at a*

[8]The definition of resemblance that we worked out in the previous chapter concerns resemblance between that which participates in the Form and the Form. The models and patterns considered in this chapter are not Forms, so our definition of resemblance must be adjusted to make reference to two objects, not a participant and a Form: An object a resembles an object b if and only if: There exists a character, P, such that a has P, and there exists a character, Q, such that b has Q, and either $P = Q$ or P resembles Q.

distance to children or fools), we seem to have captured the way in which the painting resembles the bed. But resemblance according to this modified account is plainly symmetrical; since if the painting at a distance appears to have the same character as the bed, the bed appears to have the same character as the painting at a distance.

It might be thought that the symmetry of resemblance between the painting and the bed may be avoided by looking at the painting not from afar, but up close. Yet one suspects that even the most skilfully drawn painting of a bed will deceive neither children nor fools when observed up close. Compare the colour of the bed to the colour of the bed in the painting. The blue of the bed is not a uniform patch of colour: there are differences in shading from one point to the next, various blemishes that are evident from certain perspectives, subtle and minuscule shadows that cast by the unevenness of the surface. If the bed in the painting is to be an accurate copy of the bed with respect to colour, all of these details will have to be present. Indeed, even the fabric of the bed in the painting will appear exactly as that of the bed; and the strokes of the brush by which the paint was applied to canvass will not be apparent, since the bed itself is not composed of brushstrokes. But it is simply impossible to believe the painting of the bed could resemble the bed to this degree. Similar difficulties could be raised with respect to the shape of the bed in the painting.

One might object that this conception of resemblance seems contrary to our intuitions about resemblance. After all, we want to say that a realistic painting really does resemble that of which it is a painting, and we judge the skill of the artist by this resemblance. Assuming that this sort of intuition depends not on the painting symbolising that of which it is a painting, but resembling in some other way, perhaps we can justify such an intuition by appealing to the notion of "falling short." Such a notion is not alien to the dialogues: it appears most prominently in the *Phaedo*, where sticks are said to be equal, but are actually deficient in being equal when compared to the Equal (74d4-7); and also in the *Phaedrus*, where the earthly likenesses of the Forms do not have the same lustre as the Forms themselves (250b1-5). Thus, there is a sense in which particulars do not have the character of the Forms, but are nonetheless related to the Forms. Perhaps an analogue to particulars falling short of the Forms is the painting falling short of that of which it is a painting.

There is much debate over what exactly is meant by "falling short"; but let us suppose that it means the character of the copy does not perfectly

correspond to the character of the original.[9] For the sake of simplicity, we shall focus on colour in our analysis. There are two ways in which a copied colour[10] may not perfectly correspond to an original colour: first, the copied colour may not be exactly the same hue as the original colour; and second, the copied colour may not have exactly the same saturation or intensity as the original colour.[11]

Both of these cases seem to be encompassed by our original definition of resemblance. Recall that a resembles b if there is some common character that both a and b have; and also that a resembles b if a has a character that resembles a character that b has - with resemblance between characters being defined in terms of partial identity of the characters of particulars. If the copied colour is not exactly the same as the original colour with respect to hue, resemblance between copy and original still obtains in virtue of saturation and intensity; and if the copied colour is not exactly the same as the original colour with respect to saturation and intensity, resemblance between copy and original still obtains in virtue of hue.[12]

In conclusion, the original-copy relation as exemplified by the painting of a bed does not give rise to a new account of resemblance with which we may defend Socrates. On the one hand, supposing that we are observing the painting at a distance and mistake it for the bed, the resemblance that

[9]In his commentary on the *Phaedo*, D. Gallop calls this the "traditional view" of "falling short" (1975, 129). Gallop discusses problems with the traditional view and proposes as an alternative that the character of the Form and the character of the particular are different in kind (1975, 128-9).

[10]I am assuming that even though the character of the copy does not perfectly correspond to the character of the original, the character of the copy is still a colour. If the character of the copy is not a colour, then the character of the copy is different in kind from the character of the original, which is not encompassed by the traditional view of "falling short."

[11]These parameters are taken from the hue-saturation-intensity model of defining colour. Saturation is a measure of the strength of a hue: the greater the saturation, the more vivid the colour. Intensity is a measure of the strength of light: at the extremes a hue appears either black or white; at the mean a hue is considered pure. We consider saturation and intensity together for the sake of simplicity: both saturation and intensity are easily understood as parameters applied to a hue. But our account would not change if we treated them separately.

[12]Another possibility is that the copied colour differs from the original colour with respect to hue, saturation and intensity. In this case, we may explain any perceived resemblance between copy and original by Armstrong's account of resemblance between colours, which construes such a resemblance in terms of wavelengths of light (1978, 124-7).

obtains between the painting of the bed and the bed itself is symmetrical. On the other hand, supposing that we are observing the painting up close, either no resemblance obtains, or the resemblance obtains in the sense that the painting "falls short" of the bed. But the latter may be explained by our account of resemblance, which is a symmetrical account.[13]

Original-copy relation: Reflexion of a Scarf.

Another original-copy relation touched upon by Socrates in the *Republic* is that of an image in a mirror: visible objects are that of which images in "close-grained, smooth, bright materials" are likenesses (509e1-510a3). So the second original-copy relation we shall consider is the mirror image of a red scarf. For guidance, we shall appeal to Allen's treatment of mirror images (1965, 48-51). His discussion is particularly interesting because he argues that the red of the scarf around my neck is not the same as the red of the mirror-scarf. We shall focus on the red of the scarf as opposed to other aspects for the sake of simplicity, and because it is the aspect on which Allen focusses.

It is readily perceived that there is a sense in which this original-copy relation is asymmetrical. After all, the mirror-scarf is a reflexion of the scarf around my neck, but the scarf around my neck is not a reflexion of the mirror-scarf. This may be generalised to all reflexions.[14] Furthermore, the mirror-scarf depends for its existence on the scarf around my neck; but the scarf around my neck does not depend for its existence on the mirror-scarf. Aside from the immediacy of the mirror image (no craftsman creates the mirror image in the way an artist creates a painting), it is this dependence of the mirror-scarf on the scarf around my neck that primarily distinguishes the mirror image from the painting. For although their respective originals are both, in some sense, prior by nature to the painting and the mirror image, the mirror image draws out this relation more sharply than the painting: the painting of the bed has an existence separate from the bed,

[13]We have not considered the way in which the bed is prior by nature to the painting of the bed, a factor which might prove to be essential in our understanding of resemblance. The reason for this is that a mirror image exemplifies the relation of dependence in a much clearer way than the painting; and so we defer this until our consideration of mirror images in the next section.

[14]This even holds when two mirrors are arranged to reflect reflexions. For the mirror-scarf is not a reflexion of the mirror-mirror-scarf, but of the original scarf.

whereas the mirror-scarf continues to exist only as long as the scarf around my neck does (and insofar as the scarf around my neck is oriented in such a way that the mirror may reflect it). Since we observed, when examining the words used by Socrates and Parmenides in the Regress, that some words suggest priority by nature whereas others do not, it seems reasonable and good to examine a case where there is a strong relation of dependence of the copy on the original.

Allen defines resemblance as an indirect relation, "which holds only in virtue of some common term: if x and y resemble each other, they do so in respect of some common character C" (1965, 50). This should sound quite familiar, since Allen's definition in terms of a common character amounts to part of our definition of resemblance.[15] Given such a definition, we might expect the outcome of an analysis of mirror images to be that such resemblance is symmetrical. But a surprising assertion lies at the heart of Allen's discussion: the reflexion is not similar in kind or quality to the original (1965, 49–50). It seems quite sensible to say that the reflexion is not *similar in kind* to the original. After all, the mirror-scarf cannot be wrapped around my neck in winter (cf. Allen 1965, 50). But the argument for the reflexion not being *similar in quality* to the original needs to be scrutinised.

In proposing that the relation between the scarf and the mirror-scarf is analogous to the relation between Forms and particulars, Allen is well aware that if the red of the scarf is the same as the red of the mirror image, the analogue will not suggest a way out of the Regress. Since Allen later appeals to degrees of reality in his analysis of participation (1965, 51–2), we might suppose that what differentiates the red of the scarf from the red of the mirror-scarf is that the red of the mirror-scarf falls short of the red of the scarf. But Allen does not argue this (and in any case, as we have seen in our analysis of the picture of the bed, falling short does not allow us to dispose of the problem, at least with respect to colour) — this is what makes Allen's approach interesting.

What Allen does argue is that the red of the scarf is different in quality from the red of the mirror-scarf, because the red of the latter is locatable only with respect to a reflecting medium. Perhaps Allen sensed that this distinction would be troublesome, for he provides a detailed proof in a

[15]That is, Allen defines resemblance in terms of common characters, but not also in terms of characters resembling one another.

footnote (1965, 50 n. 1):

> Mirrors are physical objects which may be located relatively to other physical objects. But we can locate reflections only relatively to the reflecting medium; otherwise, we would be forced to claim that two things, the reflection and the surface of the medium, may be in the same place at the same time. But given this as a lemma, the following argument seems sound; whatever is red is extended; whatever is extended is locatable with respect to any other thing which is extended; mirror images are not so locatable; therefore, they are neither extended nor red.

The argument at the end of the note is certainly valid: if something is red, it is extended; if something is extended it is locatable with respect to any other extended thing; mirror images are not locatable with respect to any other extended thing; and so, mirror images are not red.

A clarification is necessary. The conclusion of the argument states that mirror images are not red; but this is not exactly what Allen means. Rather, he argues that the red of the mirror image is not the same as the red of the scarf.[16] Thus, the statement that the mirror is not red must be qualified in some way: the mirror is red in some derivative way. But this leads to a significant objection to the argument: the ambiguity that Allen points to in applying "red" to both the mirror-scarf and the scarf around my neck is carried over into his argument, for Allen is not clear about the way in which these two reds are distinguished.

The most serious ramification of this ambiguity is that it makes the premiss "if something is red, it is extended" impossible to grant, because it is not clear what "red" means. There is a sense in which we do know what "red" means in this premiss: it is obviously referring to the red that colours extended objects. But this tells us nothing about the nature of the colour itself. In fact, it makes the premiss true by definition, since the red of the antecedent is the red of extended objects; and any object one might point to that is red and yet not extended is, by definition, not the red of this premiss.

This ambiguity is clearly a problem for the argument. Nevertheless,

[16] "It is for this reason that, though you may call the reflection of a red scarf red if you so please, you cannot mean the *same* thing you mean when you call its original red. The function '... is red' is, in this case, systematically ambiguous" (1965, 50).

merely citing an ambiguity is not enough to justify discarding the argument. Such a move is perhaps uncharitable, especially since commentators have not raised this objection in the literature. Furthermore, even if the argument is defective, the proposal that the red of the mirror-scarf is different from the red of the scarf should be explored beyond the bounds of the argument itself. since if this position can be justified, it would provide a starting point from which to mount a defence of Socrates.

A basis for disambiguating senses of "red" may be Allen's statement that the mirror-scarf is not similar in kind or quality to the scarf around my neck. Assuming that Allen is talking about reflexions and originals in general, and not about the mirror-scarf and scarf around my neck in particular, the red of the mirror-scarf is different from the red of the scarf around my neck, insofar as the red of the mirror-scarf is a reflexion, and the red of the scarf around my neck is the original. Thus, on the basis of this assumption, we should expect the red of the mirror-scarf not to be similar in kind or quality to the red of the scarf around my neck.

To the question of the reflexion of the scarf not being similar in kind to the scarf around my neck, Allen simply says "it is clearly false that the reflection is a scarf" (1965, 59). This seems eminently reasonable; but it also suggests a connexion between the mirror-scarf, and the mirror-scarf not being similar in kind to the scarf around my neck. Allen does not discuss the nature of this connexion, but at least one thing is clear: the reflexion not being a scarf cannot be explained solely in terms of a quality of the scarf (for Allen distinguishes between similarity in kind and similarity in quality; and if the former could be explained solely in terms of the latter, there would be no need to distinguish between the two). Thus, we cannot say that the scarf around my neck is not similar in kind to the mirror-scarf because the former is warm whereas the latter is not, or because the former is soft whereas the latter is not (for warm and soft are qualities).[17]

We might think a likely explanation is that the mirror-scarf differs in kind from the scarf around my neck because the scarf around my neck is prior by nature to the mirror-scarf. But this would not justify the assertion

[17]One might raise the objection that differing in kind may be the result of a conjunction of qualities, so that differing in kind may be explained in terms of differing in quality. But any such conjunction is itself something over and above the qualities of the object, which means that this explanation is not merely in terms of quality, but in terms of a conjunction as well — which in turn prevents us from reducing differing in kind to differing in quality.

that the mirror-scarf is not a scarf, unless priority by nature is necessarily connected to not being similar in kind. Such a connexion is clearly unwarranted: a mother is prior by nature to her child, but her child is similar in kind to the mother. A better explanation is that the mirror-scarf differs in kind from the scarf around my neck because the latter has the function of a scarf, whereas the former does not.[18] Supposing that the function of a scarf is to keep the wearer's neck warm when worn, it is clear that this function is not shared by the mirror-scarf. Thus, insofar as we define a scarf functionally (this function being a necessary condition of the scarf around my neck), we can justify the claim that the mirror-scarf is not a scarf, without referring to difference in quality.

Yet when we apply what we have learned to colours and the reflexion of colours, we do not achieve the desired results, for it does not make sense to talk about the function of colours insofar as they are colours. It is true that we associate the colours of various objects with certain functions. For example, the red surface of a stop sign serves to warn, and the white coat of a polar bear serves to camouflage. But colours considered with respect to themselves have no function. For example, the red surface of a stop sign serves to warn insofar as it is part of a stop sign; but insofar as the colour red is considered with respect to itself, it has no function (no more than any quality, considered with respect to itself, has a function). Thus, the proposition that reflexions of colours are not similar in kind to colours is unintelligible; and so we have no basis on which to disambiguate the senses of "red."

To the question of the red of the mirror-scarf reflexion of the scarf not being similar in quality to the scarf around my neck, Allen says that we do not predicate of reflexions in the same way we predicate of originals (1965, 50). That is, we say "red" of the mirror-scarf in a different sense than we say "red" of the scarf around my neck. Again, we are no closer to determining the way in which these senses of "red" differ.

The situation is complicated by the fact that on an (admittedly physicalist) explanation of why objects appear coloured, there is no difference between the red of the mirror-scarf and the red of the scarf around my neck. When light strikes a surface, it is either reflected by the surface, or

[18]It is true that we may construe function as a quality: my scarf has the quality of keeping my neck warm when worn. But it would be simple enough to work out an account of quality so that it did not include function, thereby allowing a clear line to be drawn between not being similar in kind, and not being similar in quality.

it passes through the surface, in which case the light is either absorbed or scattered. It is primarily due to the absorbing or scattering properties of certain materials that objects appear coloured. For example, a yellow object may absorb the blue part of the spectrum and scatter the red and green parts; whereas a green object may absorb the blue and red parts of the spectrum, and scatter the green part. A mirror operates differently in that its surface reflects visible light for the most part, and only minimally scatters and absorbs.

In terms of the scarf around my neck, the scarf is red, and so we may hypothesise that it appears red because it absorbs the blue and green parts of the spectrum, and scatters the red part. Thus, the light emanating from the scarf is primarily from the red part of the spectrum, which makes the scarf appear red. The mirror-scarf is also red; but this is because the surface of the mirror reflects the red light from the scarf. Thus, the light that emanates from the mirror is primarily from the red part of the spectrum, which makes the mirror-scarf appear red. Therefore, the red of the scarf and the red of the mirror-scarf are due to an emanation of red light.

Although this is an idealised explanation of why the scarf and mirror-scarf appear red, it does suggest that the red of the mirror-scarf is not different in quality from the red of the scarf (unless we can come up with a plausible argument that scattered light is different in quality from reflected light, insofar as that light is red). But once we admit this, it becomes quite difficult to sustain the claim that the red of the scarf is different in quality from the red of the mirror-scarf.

One might object that we have simply missed Allen's point. After all, he is at pains to emphasise that "the very being of a reflexion is relational, wholly dependent upon that which is other than itself: the original, and the reflecting medium" (1965, 50). In other words, the original is prior by nature to the reflexion, and the reflexion exists only insofar as there is a reflecting medium. In order to deal with this objection, we must look more closely at the original-copy relation that holds between the scarf around my neck and the mirror-scarf. There are two distinct aspects of this original-copy relation: the first is what we might call the ontological aspect. This is the aspect of the relation in virtue of which the original is prior by nature to the copy. The second aspect is what we might call the phenomenological aspect. This is the aspect of the relation in virtue of which the copy appears to be the same as the original. Since the former aspect of the original-copy relation is asymmetrical and the latter is symmetrical (according to

our argument so far), perhaps we are negligent in ignoring the rôle of the ontological aspect in our analysis.

In order to finger one aspect as primary for our considerations, we have to return to the problem these different senses of resemblance are intended to solve — namely, the problem of the one and the many. When we judge that the mirror-scarf resembles the scarf around my neck, we look to the scarf around my neck as a basis of that judgement; and so to that extent the ontological aspect of the original-copy relation comes into play. But it is a difference between the red of the scarf and the red of the mirror-scarf that Allen needs in order to argue that red is not being predicated in the same way, and such a claim is determined by the phenomenological aspect of the original-copy relation: is the red of the mirror-scarf the same as the red of the scarf around my neck? Unless one can formulate an argument that the dependence of the mirror-scarf on the scarf around my neck somehow changes the way in which the mirror-scarf is red, there is no refuge for Allen here.

Therefore, when we turn back to the specifics of Allen's argument for the mirror-scarf not being red, it is necessary to reject the premiss that whatever is red is extended. The grounds for this rejection are the ambiguity of the premiss: Allen does not simply mean red, but rather the red of extended objects as distinguished from the red of unextended objects. But since we have been unable to discover a means of distinguishing between these sorts of red (short of simply asserting that this red is the red of extended objects and not the red of unextended objects — a claim with no content beyond that which is supplied by the premiss itself), we are unable to evaluate the truth of the premiss.

Since Plato himself gives an account of mirrors and mirror images in the *Timaeus*,[19] we should look briefly (for the sake of completeness) at whether this account adds anything to our present argument. According to Timaeus, the sensation of seeing occurs when the fire of the eyes coalesces with the fire from an object that is fired by daylight. This coalescence takes place when the fire of the eye strikes the object (45b4–d3). But when we see a reflexion, the coalescence takes place on the surface of the mirror (46a2–6). Now, Timaeus is quite clear that the surface of the mirror changes the way in which the two fires coalesce. This allows him to explain why a mirror

[19]There is also an account of mirror images in the *Sophist* (266b9–c4), which is consistent with the account in the *Timaeus* but has less detail.

alters its images (such as reversing the image along the vertical axis). But there is no reason to think that these alterations include the way in which an image is coloured.

This completes our examination of the original-copy relation as exemplified by the mirror-scarf. In the absence of a way to distinguish the red of the mirror-scarf from the red of the scarf around my neck, it would seem that the resemblance between these objects is symmetrical. Thus, as an analogue to the Forms, the scarf around my neck that is then reflected in the mirror does not suggest a way out of the Regress.

Standard-instance relation: Standard Kilogram.

The standard-instance relation differs from the two original-copy relations we have studied in that the standard defines what it is to be an instance of that standard, whereas an original does not define what it is to be a copy of that original. The example we shall be considering is that of the Standard Kilogram[20] and its instances. The Standard Kilogram is a physical object: a cylinder of platinum-iridium at the *Bureau International des Poids et Mesures* in Paris. This cylinder defines what it is to be a kilogram; and an object weighs a kilogram if and only if it weighs the same as the Standard Kilogram. The same cannot be said of originals and copies: the bed does not define what it is to be a bed; and the red scarf around my neck does not define what it is to be a red scarf around my neck.

As an analogue to the resemblance between particulars and Forms, instances and standard raise two important issues. The first concerns the relation between the standard and its instances, since if the standard does not have the same character as its instances, it is not clear how we may determine whether the instances have the character defined by the standard. The second concerns the character of a standard and the character of its instances: instances of the standard have the character defined by the standard (for it is only in virtue of this that they are instances); but it is an open question whether the standard itself has the character defined by the standard. We shall proceed by first looking at the relation between

[20]That is, the International Prototype of the Kilogram. I chose the Standard Kilogram as opposed to the Standard Metre or the Standard Pound, because the Standard Kilogram is still, as I write this in 2003, a physical prototype (in fact, it is the only remaining physical prototype of a metric unit).

standards and instances, and then examine why someone might argue that the standard does not have the same character as its instances.

Aristotle draws a distinction in the *Categories* between things which are said to be univocal, and things which are said to be equivocal. If x and y are said to be univocal, they have both a name and an account in common. For example, Helen and Penelope are said to be univocal because "woman" is said of both, and the account of woman is the same in each case. In contrast, if x and y are said to be equivocal, they have a name in common, but the account is different. For example, a spiny-finned freshwater fish and a one-hundred and ninety-eight inch length are said to be equivocal because they have the name "perch" in common, but the account of the fish is different from the account of the length.

For our purposes, it is easier to talk about the relation between the senses of a word, rather than the relation between the things to which a word is applied. And so, by extension, we shall posit that if x is said of two objects in the same way (as "woman" is said of Helen and Penelope), then x is said of those objects univocally. And if x is said of two objects in different ways (as "perch" is said of a fresh-water fish and a magnitude), then x is said of those objects equivocally.

Now at this point, it should be obvious that if x is said of two objects univocally, then those objects resemble one another in virtue of the character that corresponds to x (according to our initial definition of resemblance), and that resemblance is symmetrical. And if x is said of two objects equivocally, then those objects do not resemble one another in virtue of the character that corresponds to x (assuming that the character in virtue of which the first object is said to be x does not resemble the character in virtue of which the second object is said to be x).

When we apply these distinctions to the Standard Kilogram and its instances, it is clear that if the Standard Kilogram and its instances are said to be kilograms in a univocal way, the analogue will not offer a way out of the Likeness Regress. While such an account explains how the Standard Kilogram and its instances resemble one another, this resemblance is symmetrical. In contrast, if the Standard Kilogram and its instances are said to be kilograms in an equivocal way, we have no suitable way to explain the resemblance between the Standard Kilogram and its instances. What we need is a mean between univocity and equivocity. Fortunately, Aristotle offers us some help here as well.

According to Aristotle, that which is healthy is said to be πρὸς ἕν,

because everything which is healthy is said to be such in relation to health. He illustrates this by pointing out that things are said to be healthy because they preserve, produce, indicate or receive health (*Met.* Γ2, 1003a33–b4). As with our discussion of univocity and equivocity, it is more convenient for us to talk about the relation between senses of a word rather than the relations to which the word applies. Thus, we shall focus on sense, and say that a word has focal meaning[21] under certain conditions.

What are the conditions under which a word has focal meaning? Aristotle provides a reasonably complete (if brief) explanation in the *Eudemean Ethics* (H2, 1236a15–23):

> For [all these senses] are related to one which is primary; just as with [the word] "medical." For we speak of a medical soul, body, instrument and action, but [the word is] proper to that which is primary. The primary is that whose definition is in the definition of all; for example, a medical instrument is that which a medical man would use; but the [definition] of the instrument is not in the definition "medical man." Therefore, one seeks everywhere that which is primary.

This passage specifies two criteria for x to have a focal meaning: the first is that x must be said in many ways; the second is that there must be a primary sense of x whose definition is contained in the definition of all the other senses of x, but whose definition does not contain the definition of any other sense of x.[22] The first criterion shows how closely focal meaning

[21]The term "focal meaning" is, of course, the standard English terminology used for this since G. E. L. Owen's seminal article on πρὸς ἕν (1960). It seems that Aquinas used the term "analogical predication" to mean the same thing; I say this because in his treatment of the names of God, Aquinas uses the example of "health" (*Summa* I, Q. 13, Art. 5) to illustrate analogical predication, which seems directly related to Aristotle's illustration cited above. Other common terms are "πρὸς ἕν equivocation," which seems odd given that Aristotle states that being is said πρὸς ἕν "but not equivocally" (*Met.* Γ2, 1003a33–4). And T. Irwin introduces the term "focal connexion" into the mix (1981, 531), in order "to avoid the misleading suggestion that Aristotle means to indicate a relation between senses of a word ... rather than between the things the word applies to."

[22]M. Ferejohn expresses this second criterion very nicely in his definition of focal meaning: (1980, 120) "A term T has *focal meaning* iff (i) T is "said in many ways," and (ii) one of T's many *logoi* is non-reciprocally contained in T's remaining *logoi* (i.e., its significata are logically prior to them)."

is related to equivocity: in both cases, x is said in many ways. The second criterion is what distinguishes focal meaning from equivocity, namely the requirement that one sense of x is logically prior to the other senses.[23] For example, line is logically prior to plane surface, because the definition of plane surface includes the definition of line (cf. *Elements* Def. I.2, Def. I.7).

These criteria are of great import for our analysis of the standard-instance relation, since a standard both shares the same name as its instances, and is logically prior to its instances. The main proponent of this analysis is P. T. Geach, who introduces the notion of standards at the end of a paper examining the Third Man (1965, 276). Although Geach does not explicitly discuss focal meaning, this concept is clearly operating beneath the surface.[24] According to Geach, we use "kilogram"[25] both of the Standard Kilogram and of the shopkeeper's kilogram weight. But the Standard Kilogram is a kilogram essentially — we might say of the Standard Kilogram that it "is kilogram," or that it "is what kilogram is" — whereas a kilogram weight is a kilogram in virtue of being the same weight as the Standard Kilogram.

It is clear that "kilogram" meets the second criterion for focal meaning. Without even explicitly stating the definition of kilogram, we can see that the Standard Kilogram must be logically prior to kilogram weights. Suppose that we shaved off some of the material from the Standard Kilogram so that it becomes lighter. In this case, what a kilogram is changes. But

[23] If A is logically prior to B, then the definition of A is contained in the definition of B, but the definition of B is not contained in the definition of A (cf. *Met.* Z1, 1028a35–6).

[24] "In this familiar example of a standard and the things measured by the standard, there is nothing to surprise us in the fact that 'pound' is said of the standard pound and 'the many' pounds only analogously, and surely no temptation to replace the analogical use of 'pound' by use of a new term 'pound_1'" (1965, 276). Here we can see Geach denying that "pound" is used equivocally of the standard pound and pound weights, instead using Aquinas' terminology. (Note that while Owen probably used the term "focal meaning" at the August 1957 meeting of the *Symposium Aristotelicum,* the term does not appear in print until the publication of *Aristotle and Plato in the Mid-Fourth Century* in 1960. Since Geach's paper was published in 1956, it is not surprising to find Aquinas' terminology.)

[25] As may be noted from the previous footnote, Geach speaks of pounds not kilograms; I make the substitution (with apologies to the author) for uniformity of reference, without changing the sense of his argument. Furthermore, despite there being multiple (and differing) standard pounds (Tower, Troy, Avoirdupois, &c.), these standards have all been redefined as fractions of the Standard Kilogram.

if we shaved off some of the material from a kilogram weight so that it becomes lighter, it simply ceases to weigh a kilogram. Thus, the definition of the Standard Kilogram must be prior to that of the kilogram weights, because modifying the Standard Kilogram changes the definition of kilogram, whereas modifying the kilogram weights does not affect the definition of kilogram, but rather the kilogram weights, which cease to be kilograms by definition.

Meeting the first criterion for focal meaning — that x is said in many ways — is slightly more involved. In order to do this, Geach must establish that "kilogram" is used in different senses when it is applied to the Standard Kilogram and kilogram weights. There are two ways in which Geach bolsters this claim: first, he draws a distinction between what is a kilogram essentially, and what is a kilogram accidentally (a result of the Standard Kilogram being logically prior to the kilogram weights);[26] and second. he argues that the Standard Kilogram cannot be weighed against itself (1965, 276).

The first point highlights a distinction between that whose essence is kilogram, thus weighing a kilogram regardless of what it weighs (the Standard Kilogram), and that which is accidentally a kilogram, and weighs a kilogram only in comparison to the standard.[27] This is fair enough: when "kilogram" is said of that whose essence is kilogram, "kilogram" seems to be operating in a different sense than when it is said of that which is accidentally a kilogram. And so it seems, with this, that Geach has met both criteria for focal meaning for "kilogram," since it is used in many ways, and one of its senses is logically prior to all its other senses.

If the Standard Kilogram is taken as an analogue to the Forms, does it show us a way out of the Likeness Regress? The short answer is, not yet; but there are a number of elements that this analogue captures admirably. First, insofar as the Standard Kilogram is logically prior to the kilogram weights, we could comfortably say that the kilogram weights are kilograms insofar as they resemble the Standard Kilogram. And furthermore, insofar

[26]Here, "essence" and "accident" do not have their usual meaning. Something is called a kilogram essentially when it defines what it is to be a kilogram; and something is called a kilogram accidentally when it is a kilogram only with reference to a standard.

[27]This is parallel to Aquinas' point about wisdom (*Summa* I, Q. 13, Art. 5): when the "term *wise* [is] applied to man, we signify some perfection distinct from a man's essence ... But when we apply *wise* to God, we do not mean to signify anything distinct from His essence or power or being."

as "kilogram" is said differently of both the Standard Kilogram and the kilogram weights, there is no additional standard which both the Standard Kilogram and the kilogram weights resemble (insofar as they are said to be kilograms). But it is not enough for "kilogram" to be said of the Standard Kilogram in a different way than it is said of kilogram weights; there must be no additional sense of "kilogram" which the Standard Kilogram and kilogram weights have in common. And this is precisely what we are missing.

Geach's second point is that the Standard Kilogram cannot be weighed against itself. Presumably Geach is thinking that something is called a kilogram when the Standard Kilogram is placed in one pan of an equal-arm balance, the object to be weighed is placed in the other pan, and the arms balance. Since the Standard Kilogram cannot be placed simultaneously in both pans (lest it be separate from itself), the Standard Kilogram cannot be weighed against itself. And since the only way we can tell whether something is a kilogram — in the sense that kilogram weights are a kilogram — is to weigh it against a standard, the Standard Kilogram is not a kilogram in this sense.

This seems to turn on a rather restrictive definition of "kilogram"; namely, that an object is a kilogram if and only the arms balance when the object is placed in the pan opposite the Standard Kilogram. Perhaps we might object that we call something a kilogram even though we do not place it opposite the Standard Kilogram, but rather a kilogram weight modelled on the Standard Kilogram. In this way, it seems that the Standard Kilogram is also a kilogram in the sense that a kilogram weight is a kilogram.[28] But we may imagine Geach responding that this is only a practical necessity (since it is impossible to weigh everything against the Standard Kilogram), and an object is a kilogram if and only if the arms would balance (theoretically speaking) if the object were placed in the pan opposite the Standard Kilogram. Since the Standard Kilogram cannot (even theoretically) be separate from itself, the Standard Kilogram is not a kilogram in this sense.

The downfall of this argument is an observation about the nature of an equal-arm balance. Such an instrument balances only if the objects in both pans weigh the same. It cares not for what is essential or accidental, what the objects are made of, or what they signify. It is only concerned with the

[28]This parallels Vlastos's point (1965, 285–6) in his response to Geach.

character of weight. It is clear that, if we place the Standard Kilogram in one pan, and a kilogram weight in the other, the balance will reveal that the Standard Kilogram has the same character as the kilogram weight, with respect to weight. And insofar as we apply the name "kilogram" to objects of that weight, this name applies univocally to both the Standard Kilogram and kilogram weights.

A consideration of two objections remains. First, we should consider whether the character of an object differs based on the way in which the object manifests that character.[29] An analogy helps to draw this out. Suppose that we have a squaring function $f()$, and a doubling function $g()$, and note that $f(x) = g(x)$ is true when $x = 2$. We may distinguish between the referent of the left and right sides of the equation, which is the same when $x = 2$, and the senses of the left and right sides, which are different. Now, let us suppose that the character of an object is not what we have hitherto been referring to as the character of an object, but rather the conjunction of two factors:[30] the outward character (that which an object acquires in virtue of participation in a Form) and the inward character (an explanation of how the outward character is made manifest). By analogy, the outward character of an object is the referent of one or other side of the equation, and the inward character of an object is the sense of the expression. And so, just as both sides of the equation have the same referent (when $x = 2$) but different senses, so too a pair of objects may have the same outward characters, but different inward characters — and since character (without qualification) is the conjunction of outward and inward, the character would differ as well.

Extending this distinction between outward and inward character to our consideration of weights, both the Standard Kilogram and kilogram weights have the same outward character, but the inward character is different (for the former is a kilogram because it is the Standard, whereas the latter are kilograms only with reference to the former). Hence, we may assert that the Standard Kilogram and the kilogram weights are of different character. But this means that, on the assumption that "kilogram" names the character of

[29]This consideration (and in particular, the mathematical analogy) finds its origin in, but is not directly related to, a work by Anscombe and Geach, in which they consider Aquinas' doctrine that God may be both essentially wise and essentially powerful without contradiction (1961, 122).

[30]We use the terms "outward character" and "inward character" only in aid of this objection, and revert to our usual sense of "character" afterwards.

both the Standard Kilogram and kilogram weights, the word is not applied univocally.

This objection has some force, as long as we maintain that how an object comes to manifest an outward character is part of the character of the object. But with respect to Forms and particulars, we are less concerned with an explanation of how an outward character is made manifest, and more concerned with the Form as that in virtue of which the particular has the outward character it does. For example, suppose that I have two rings: one of solid gold, and one of iron with gold plating. For the sake of the argument, allow that the rings have been made by a skilful smith, so that the gold plating of the iron ring is of the same quality as the gold of the gold ring; and furthermore, that each is gold in colour, regardless of the fact that one ring has an iron core. Under these conditions, we may say that the gold ring and the iron ring both participate in the Form Gold (the colour), which means that the inward character of each is participation in the Form. It does not matter that we might explain the colouring of the rings as having been brought about in very different ways: Socrates' "safe answer" is such that he ignores all "sophisticated causes" and looks to Forms alone as explanations of why particulars have the outward characters they do (cf. *Phaedo* 100c9–d8). Therefore, the outward and inward characters are the same insofar as Forms are concerned, and so this objection is prevented from having any force.

Second, one might raise the objection that our account has not addressed issues surrounding the teaching *de divinis nominibus* — and so we should make it clear why we have not delved into these debates. The reason the Standard Kilogram is a better candidate for a standard than God is because the latter introduces a red herring (so far as our purposes are concerned) into the discussion. Although arguments concerning the names of God allow that we know what wisdom is, and that there is a God, they do not allow that an explanation may be given as to the way in which wisdom is identical to the essence of god, only that this identity is so (cf. Geach 1961, 123). Since we can explain the way in which kilogram is identical with the Standard Kilogram, the Standard Kilogram is a better analogue to the Forms.

In conclusion, "kilogram," when applied to the Standard Kilogram and kilogram weights, does have focal meaning: it is used in many senses, and the sense in which the Standard Kilogram is essentially a kilogram is logically prior to the sense in which kilogram weights are kilograms. But the

Standard Kilogram is a kilogram in two senses: it is also a kilogram in the same sense in which all the kilogram weights are kilograms. Therefore, the standard-instance relation, as exemplified by the Standard Kilogram and kilogram weights, does not allow for a way out of the Regress.

3.3.2 Patterns

Instructions-result relation: Musical score.

In the cases we have considered hitherto, once we modified the definition of resemblance to hold between objects (as opposed to between Forms and particulars exclusively), it was easy to see how the resemblance relation obtained. In fact, there is a sense in which the resemblance of the definition applied all too well, since the resemblance that obtained in each case turned out to be symmetrical, which prevented us from finding a way out of the Regress. The problem that we encounter with patterns is the other side of the coin: it is clear that the definition of resemblance with which we have been working does not apply; and given that, there is no obvious account of the relation that obtains, and even questions as to whether such a relation should be called "resemblance" at all. The case we shall examine is that of a musical score and music produced according to that score. We shall follow our description of the score and the music with a justification for supposing that the relation between the two is an analogue to the relation between the Form and the particulars that resemble the Form.

The term "musical score" is very wide-ranging, and so perhaps it is best to circumvent possible ambiguities by basing our discussion on a particular musical score, that of the first five measures of Beethoven's *Appassionata* (see Figure 3.1). We notice that even in this short excerpt, there is a plethora of instructions about how to produce the music. This score specifies tempo *(allegro assai)*, dynamics *(pianissimo)*, key (*f* minor), pulses per measure (12) and relative time value for each pulse (8), the pitch and relative duration for each note, and so on. Furthermore, there is much that arises out of common practice for the period that is simply understood (for example, the notes that fall on the first pulse of each measure are slightly accented; and the instrument on which the passage is played is supposed to be tuned according to equal temperament — but neither of these instructions is explicit). To avoid questions regarding the relation between the instructions provided by the score and those provided by common practice,

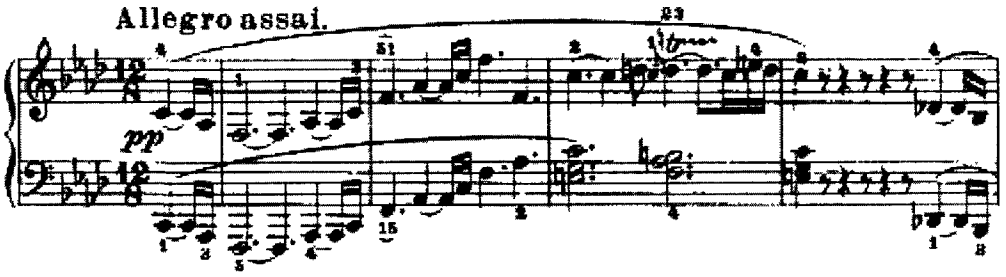

Figure 3.1: *Appassionata — Sonata No. 23 in f minor*

and whether such instructions are consistent, and to avoid questions of individual interpretation, let us make two assumptions: first, that the gobbet above provides all the information required for a pianist to perform the first five measures of *Appassionata*; and second, that any music produced by any performance in accordance with this gobbet will be the same.[31]

It is clear that the definition of resemblance with which we have been working hitherto does not describe the relation between the musical score and the music, except perhaps in a trivial sense. That is, it may be the case that both the score and the music performed in accordance with the score are both sensible objects, since the former is seen and the latter is heard. Or if we may speak of music being in a certain place, the distance from the sun of both the score and the music is greater than a few kilometres. And so resemblance may obtain in such senses. But these sorts of resemblance contribute nothing to our understanding of the relation between the score and the music, insofar as the score is an analogue of the Form, and the music is an analogue of particulars. Recall that the relevant sense of resemblance with respect to Forms and particulars is the resemblance that explains the way in which many particulars may participate in a single Form. Similarly with the score and the music, if we are to say they resemble one another, our account must explain the way in which many performances may be manifestations of a single score.

If we confine our understanding of resemblance to the character of the

[31] One might argue that these assumptions are embodied in György Liget's *Six Etudes for Player Piano*. When a roll of these etudes is played through a player piano, the machine reproduces the composer's instructions precisely, with the roll determining the pitch, volume and duration of each note. Furthermore, any two performances of a given roll are the same (assuming the same piano is used, and the tuning does not drift).

score and the music, and look for that character that explains the way in which many performances are manifestations of a single score, we find no such character that meets this criterion. Perhaps the relation between the score and the music should not be described as one of resemblance. Nevertheless, the relation between the score and the music seems to function analogously to the relation between the Form and particulars, in several important respects. First, the thesis that particulars resemble Forms provides a possible solution to the problem of the one and the many, since it explains how many particulars may have one and the same character in virtue of a single Form, without that Form being separate from itself. The relation between the score and multiple performance of that score is such that although the performances are many, the score is not thereby separate from itself. Second, particulars that participate in the same Form all have the same character (for many particulars having the same character provides the motivation for supposing that they all participate in one and the same Form). This is embodied in our second assumption regarding the score, that any music produced in accordance with our gobbet will be the same. Third, the Form is that in virtue of which the particulars have the character they do (cf. 129a2–6, but note that the music does not acquire the character of the score). The relation between the score and the music is similar, in the sense that the score is that in virtue of which the music of a performance is a performance of the *Appassionata*, and not of some other work.[32]

Just as the resemblance relation between Form and particular explains how the Form is not separate from itself, the many particulars have one and the same character, and the particular has the character it does in virtue of its relation to the Form, so too the relation between score and music explains how the score is not separate from itself, many performances of the score are the same (one of our assumptions about the relation between the score and the music), and the music has the character it does in virtue of its relation to the score. Therefore, whether the relation between the musical score and the music is one of resemblance or not, it is clear that this relation shares some significant features with the relation between the Form and particulars that participate in the Form. On this basis, we turn

[32]In addition, one could argue that this feature of the analogy provides a basis to suppose that there is a further point of contact, between the name of a particular and the name of music; for just as Penelope is called "beautiful" only in virtue of Beauty (cf. 130e5–131a1), so too the music is called "*Appassionata*" only in virtue of the score.

to a closer examination of the relation between the score and the music.

The first five measures of the *Appassionata* are turned into music by means of a pianist of sufficient skill and a piano. This does not mean we must delve into the psychology and physiology of piano performance; but it does mean that we must sketch out the process by which a visual score is turned into audible music. Looking at the gobbet of the *Appassionata* printed above, a pianist combines knowledge of how to read the score together with physical technique, and acts on the keyboard. The action performed on the keyboard causes the instrument to sound in a particular way, and when many sounds are played in succession, we hear the music of the gobbet.

The details of exactly how the pianist and piano work together to turn score into music are not important for our purposes, except insofar as we recognise that the process may be described as a function, and that function has certain features. We describe the process as a function in the sense that the pianist and piano take the musical score as input, and the music that results is the output. Represented in a quasi-mathematical style, we have $m(x) = y$, where the function $m()$ takes score x as its input (where x is a piano score which our pianist is capable of playing), and music y is the result of the function being applied to x.

The feature of $m()$ with which we are primarily concerned is that it is not self-inverse (to borrow a term from mathematics). Function $g()$ is the inverse of function $f()$ if and only if for any argument a, if $f(a)$ returns b, then $g(b)$ returns a.[33] An example of a function and its inverse is $f(x) = x + 1$ and $g(x) = x - 1$, where x is a member of the set of integers; since $f()$ adds one to its argument, and $g()$ subtracts one from its argument. Function $f()$ is self-inverse if and only if for any argument a, if $f(a)$ returns b, then $f(b)$ returns a.[34] An example of a self-inverse function is $f(x) = -x$, where x is a member of the set of integers; since for any argument a, $f()$ returns $-a$, and for any argument $-a$, $f()$ returns a.

It is clear that $m()$ is not self-inverse, since the process by which a score is transformed into music is different from the process by which music is transformed into a score. With respect to the knowledge that is required, the knowledge of reading and playing music is different from the knowledge

[33]That is, $g(f(x)) = x$. In other words, the operation of $g()$ undoes the operation of $f()$.

[34]That is, $f(f(x)) = x$. In other words, the operation of $f()$ undoes the operation of $f()$.

of writing music (for someone who is quite adept at performance may have little knowledge of rudiments). Furthermore, with respect to the instrument used, the pianist uses a piano to make music, but the composer uses a pen to make a score. Therefore, with respect to both knowledge and instrument (and in many other respects which we have not mentioned), the processes in question are different, and thus $m()$ must not be self-inverse.

It is important for $m()$ not to be self-inverse, because a self-inverse function, when expressed as a relation, is a symmetric relation; whereas a function that is not self-inverse, when expressed as a relation, is not symmetric. Suppose that $f()$ is a self-inverse function, which we express as a two-place relation F. In this case, F is symmetrical, since for any x and any y, Fxy implies Fyx, and Fyx implies Fxy. In contrast, suppose that $g()$ is not a self-inverse function, which we express as a two-place relation G. In this case, G is not symmetrical, since for at least one x and one y, Gxy does not imply Gyx. But if $m()$ is not self-inverse, then the relation between the score and the music is not symmetrical.

Thus, it appears as if we have found that the relation between the score and the music is not symmetrical, but that the music is related to the score in a way which parallels the way in which particulars are related to Forms under Socrates' thesis in the Likeness Regress.[35] On the basis of this

[35]Note that there are additional resemblances between (i) the relations that hold between parts of the score and (ii) the corresponding relations that hold between parts of the music. For example, the vertical distance between notes on a score is reflected by the tonal distance between notes sounded by the instrument (that is, the greater the vertical distance between x and y on the staff, the greater the tonal distance between the sounds corresponding to x and y on the instrument — assuming that accidentals are not taken into account). This is not a direct relation, in the sense that the distance between the notes on the score is directly proportionate to the distance between the notes sounded by the instrument, since on instruments tuned to equal temperament, the octave is divided into twelve equal parts, whereas the number of lines and spaces on the staff divide the octave into seven parts (where five of those parts are equal to one-sixth of an octave, and two of those parts are equal to one-twelfth of an octave).

For example, in the gobbet of *Appassionata* cited above, the distance between the second and third notes (C to A♭) and between the third and fourth notes (A♭ to F) is the same on the staff; but the interval between the notes sounded on the instrument is a minor third and a major third respectively (where a minor third is a smaller tonal distance than a major third). Thus, the distances are not directly proportionate.

What we can say is that the larger (or smaller) the distance between the notes on the score, the larger (or smaller) the tonal distance between the notes sounded by the instrument. Similar parallels may be drawn with respect to reading the music: the

analogue, we can mount a defence of Socrates' position.

Original-transformation relation: Circle.

The case of the musical score is deficient in two respects. First, it was necessary to constrain the relation between the score and the music by a series of assumptions, in order to ensure the consistency of the function that transforms the score into music, such that the same input always results in the same output. Such constraints are blatantly artificial, and even antithetical to ideals of live performance. Second, it was necessary to gloss over the intricacies of the function that transforms the score into music, since this is not a treatise on the psychology and physiology of piano performance. But since the nature of this function is so central to our argument, such imprecision seems somewhat unsatisfactory.

With this in mind, we shall examine the relation between a circle on a Cartesian plane and an ellipse that results from a horizontal stretch applied to the circle. This case corrects for the two deficiencies discovered when considering the case of the musical score: first, a linear transformation always produces the same output given the same input; and second, it is possible to articulate the nature of a linear transformation function with absolute precision.

The equation of the circle we shall be considering is $x^2 + y^2 = 1$ (that is, a circle whose radius is 1, and whose centre is the origin). The linear transformation is a horizontal stretch represented by the matrix $\begin{bmatrix} 2 & 0 \\ 0 & 1 \end{bmatrix}$, so that the equation of the resulting ellipse is $\frac{u^2}{4} + v^2 = 1$ (that is, an ellipse with semi-axes of length 2 and 1, and whose centre is the origin). Figure 3.2 is a graphical representation of our curves on a Cartesian plane.

When considering the relation between the score and the music, we worked out three points of contact between this relation and the relation

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relative position of a particular bar on the score with respect to the beginning and the end of the score resembles the relative position of the music played in accordance with that bar with respect to the beginning and the end of the music.

Nevertheless, apart from supporting our intuition that the music really does resemble the score, these sorts of resemblances are not relevant to our consideration of the resemblance between Forms and particulars — unless we are prepared to argue that there is a resemblance between (i) the relations that hold between parts of the Form and (ii) the relations that hold between parts of the particular.

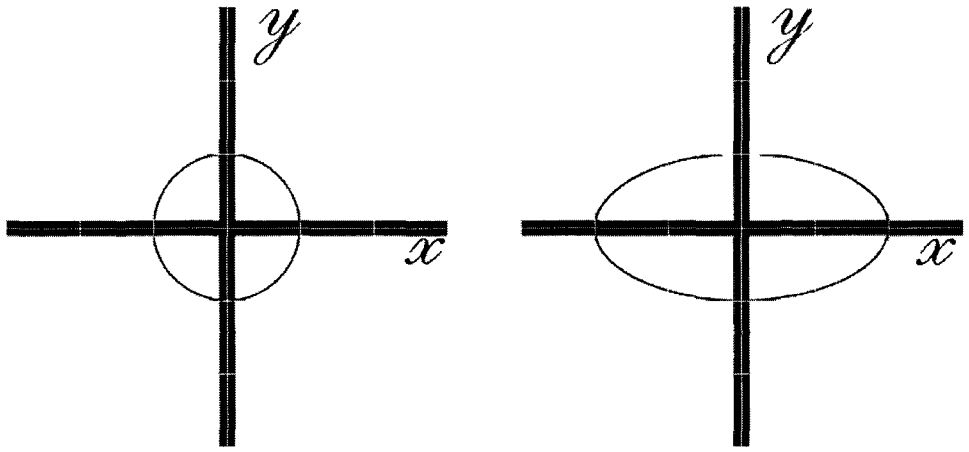

Figure 3.2: Curves on a Cartesian Plane

between Forms and particulars. We noted that the relation between Forms and particulars provides a possible solution to the problem of the one and the many; that all the particulars that participate in the same Form all have the same character; and that the Form is that in virtue of which the particulars have the character they do. Each of these features is parallelled in the relation between the circle and the ellipse: many ellipses may be generated from one and the same circle, and yet the circle does not become separate from itself; all ellipses that result from the same transformation of the circle are identical; and the circle is that in virtue of which the ellipse has the character it does.[36] Therefore, even if the relation between the circle and the ellipse is not one of resemblance, it seems as if the resemblance relation as described by Socrates in the Regress shares some significant features with the relation between the circle and the ellipse.

One of the advantages of linear transformations is that we know exactly how a horizontal stretch operates on the circle to produce the ellipse.[37] We may describe this transformation as $h(x) = y$, where $h()$ is the horizontal

[36]This last point follows from the fact that if the formula of the original circle is modified, the resulting ellipse will not be the same (although if the original circle is not represented by $x^2 + y^2 = 1$ but by an equivalent formula, such as $(x + y)^2 = 2xy + 1$ or $x + y = \sqrt{2xy + 1}$, the resulting ellipse will be represented by an equivalent formula). It is possible for our ellipse to result from a different original, but only if we modify the linear transformation.

[37]To calculate the equation of the ellipse resulting from this horizontal stretch, suppose

stretch function that takes x as its input (where x is a curve, function or vertices in $\mathbb{R}^3$) and y is the result of the function being applied to x. It is clear that $h()$ is not self-inverse: the application of $h()$ to our ellipse does not result in the original circle, but rather an ellipse which is stretched further, with semi-axes of length 4 and 1.[38] And if $h()$ is not self-inverse, it is clear that the corresponding two-place relation, H, is not symmetrical, since for at least one x and one y, Hxy does not imply Hyx.

3.4 Asymmetrical Resemblance

The shape of asymmetrical resemblance is now apparent from the relation between the score and the music, and from the relation between the circle and the ellipse. There are two features that these relations share: the first is that the relation may be expressed as a function, complete with a well-defined input and output; the second is that the function is not self-inverse. It is reasonable to suppose that any resemblance relation between Forms and particulars will have these features if it is to be asymmetrical.

3.4.1 Expressing Resemblance as a Function

Socrates says that participation is for particulars to resemble Forms. As we know from our examination of this relation in the previous chapter, Socrates is not interested in just any resemblance, but resemblance between the essential character of the Form (the character that is peculiar to this Form, in virtue of which it is this Form) and the character the particular has in virtue of the Form. For example, when we say that Helen participates in Beauty by resembling it, we do not mean that Helen resembles Beauty

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that (u, v) is the image of any given point (x, y). Hence, $\begin{bmatrix} u \\ v \end{bmatrix} = \begin{bmatrix} 2 & 0 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 2x \\ y \end{bmatrix}$, so $x = \frac{u}{2}$ and $y = v$. By substituting into the original equation, we get $\frac{u^2}{4} + v^2 = 1$, which is the formula of the resulting ellipse. Thus, the point (x, y) lies on circle $x^2 + y^2 = 1$ if and only if the point (u, v) lies on ellipse $\frac{u^2}{4} + v^2 = 1$. (Cf. Anton 1987, 268–9.)

[38] Two examples of self-inverse linear transformations are the identity transformation, represented by matrix $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, and (more interestingly) the reflexion through the origin, represented by matrix $\begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}$. It is clear that the horizontal stretch is not equivalent to either of these.

without qualification, or insofar as both Helen and Beauty are both one, but rather that Helen resembles Beauty because both Helen and Beauty are beautiful. Thus, we may analyse the resemblance relation between particular and Form in terms of the character of the particular and the essential character of the Form.

Hence, when we conceive the resemblance relation as a function, the input for that function is the character a particular acquires in virtue of the Form, and the output is the essential character of the Form.[39] Expressed in a quasi-mathematical style, supposing that the resemblance relation is expressed as function $r()$, the character the particular acquires in virtue of the Form as c', and the essential character of the Form as c, we may claim that $c = r(c')$.

One might object that there is something unsatisfactory about this account, because Socrates' conception of resemblance in the Regress involves Forms and particulars, but the formula $c = r(c')$ reduces resemblance to a relation between characters, with no reference to Forms and particulars. Nevertheless, Forms and particulars are intimately involved in this account; they are just not made explicit in the formula. Insofar as c stands for an essential character, we must recall that the definition of an essential character involves a reference to the Form that is the bearer of that essential character. That is, the essential character c is the essential character of one and only one object, and that object is a certain Form. Thus, c implicitly refers to a Form. Furthermore, c' stands for the character a particular acquires in virtue of the Form, and so c' implicitly refers to a particular.[40]

[39]It might seem odd to take the particular's character as input and the Form's essential character as output, especially in light of the analogies that we have considered. Nevertheless, this is to be consistent with Socrates' original statement of resemblance, which is that particulars resemble Forms (not that Forms resemble particulars). In the final analysis, what is taken as input and output does not matter so much as the relation between input and output.

[40]This is exactly what we should expect, by analogy to the score. The score of the *Appassionata* is a visual presentation of a certain musical notation, on a surface that is capable of bearing this notation. Whether that surface is of paper, clay or stone does not matter so much as whether the visual presentation may be borne by that surface. That the score is borne by a surface is essential, for without such a bearer, the visual presentation would not be possible. But insofar as the score resembles music, the bearer is not relevant other than as a necessary condition for the visual presentation. This is parallel to conceiving the Form as a bearer of the c, and the particular as a bearer of c' (where the Form and the particular are necessary conditions of c and c' respectively).

3.4.2 $r()$ is not Self-inverse

Since a function $f()$ is self-inverse if and only if $f(a)$ returns b if $f(b)$ returns a, it must be the case that $c' \neq r(r(c'))$. In virtue of this principle, we know that c is not identical to c'; for in such a case, $r()$ becomes the identity function, which is obviously self-inverse. In the context of Forms and particulars, this means that although Beauty is beautiful, and Helen is beautiful, "beautiful" is not said univocally of Beauty and Helen.

But c not being identical to c' is not enough to justify the denial of the symmetry of resemblance, for the identity function is not the only self-inverse function. It must also be the case that if $c = r(c')$, then $c' \neq r(c)$. Intuitively, it might seem that we are on the right track, even if we do not know what $r()$ involves. Since c is the essential character of an eternal form, and c' is just one of the many characters of a particular, it does not seem far-fetched to assert that the function that takes c' as input and returns c as output, is not the same function as that which takes c as input and returns c' as output. Nevertheless, to go beyond an intuitive sense of being on the right track requires a detailed account of $r()$.

3.4.3 A New Defence of Socrates

Now that we have sketched the outline of an account of asymmetrical resemblance for the Regress, we should turn to the question of whether we can use it to defend Socrates. At the beginning of this chapter we stated that there are two basic tacks that commentators have taken in the defence of Socrates: the first is to argue that some aspect of the resemblance relation is asymmetrical; and the second is to argue that the character of the Form is not the same as the character the particular acquires in virtue of the Form. As should be clear by now, our account of asymmetrical resemblance aims to make both of these claims simultaneously: on the one hand, $r()$ is not self-inverse (which means that the resemblance relation is asymmetrical); and on the other hand, $r()$ is not an identity function (which means that the essential character of the Form is not the same as the character the particular acquires in virtue of the Form).[41]

[41] This means that not being self-inverse is primary, since if $r()$ is not self-inverse, it cannot be the identity function.

At this point, it is not difficult to provide an account of Socrates' statement that particulars resemble Forms, in such a way that it breaks the Regress:

> A particular p resembles Form F if and only if: There exists a character, c', such that p has c', and there exists an essential character, c, such that F has c, and $c = r(c')$, where $r()$ is a function that is not self-inverse.

This account of resemblance will derail the Regress at (3) (the symmetry assumption), because $r()$ is not self-inverse, and so (3) is not true.

Nevertheless, if Socrates is to deny (3) legitimately and escape the consequences of the Regress, he requires more than this account of asymmetrical resemblance: he needs to give an account of $r()$. This is a tall order. It is true that we know $r()$ must not be self-inverse; but without a detailed explanation of how $r()$ relates the character of the particular to the essential character of the Form, $r()$ is only a little more than an empty place-holder.

Unfortunately, a satisfactory explanation of $r()$ is completely missing from the Regress. Socrates does not qualify his initial account of resemblance, and so as it stands, it admits of either a symmetrical or an asymmetrical interpretation. Parmenides chooses the former and drives Socrates headlong into the Regress. A choice of the latter might have worked in Socrates' favour, but given the complexities of our account of asymmetrical resemblance, Parmenides cannot be blamed for avoiding it. Therefore, Parmenides' refutation of Socrates in the Likeness Regress seems perfectly justified. The task that remains for us is to determine whether we can, with Plato's help, give a satisfactory account of $r()$.

Chapter 4

Resemblance in the *Timaeus*

ἀγεωμέτρητος μηδείς εἰσίτω.

Olympiodorus, *Proll.*
viii.39-ix.1

In the previous chapter, we determined that Socrates would not fall prey to the Likeness Regress if the resemblance relation of particulars to Forms could be expressed as a function that was not self-inverse. Such an account of resemblance would allow Socrates to deny the symmetry of resemblance, and in so doing, reject premiss (3)[1] of the Regress. But we also noted that Socrates does not give any explanation of resemblance, except in the form of several admissions to Parmenides that allow us to sketch out some basic features of the relation. Thus, we have no grounds for saying that Socrates has in mind a resemblance relation that is asymmetrical; and there is nothing in the sparse explanation we are given that prevents it from being symmetrical.

We might wonder whether there is anything in the *Parmenides* that prevents resemblance from being asymmetrical. We do not find any evidence to this effect in the Likeness Regress itself; but an asymmetrical account of resemblance seems antithetical to one of the initial hypotheses about Forms that Socrates establishes. In his solution to Zeno's paradox, Socrates says that particulars acquire the character of the Form in the respect that and to the degree that they participate in the Form (128e12–129e5). This suggests that both the Form and particular share the same character, which

[1] $(\forall x_f)(\forall u_d)(Rux \rightarrow Rxu)$

strongly supports taking the resemblance of particular to Form as a symmetrical relation. We could try to deflect this line of reasoning by arguing that resemblance obtains not by the character of the particular being the same as the character of the Form, but by the character of the particular corresponding to the character of the Form in some regular and predictable way. But this seems speculative to say the least, as far as the *Parmenides* is concerned, and is not supported by the picture of resemblance we get in the dialogue.

Commentators have argued that we find in the *Timaeus* an account of resemblance that is not vulnerable to the argument of the Likeness Regress. For example, E. N. Lee claims that "apparently Plato believed that his metaphysics of image in these pages [48e2–52d1] made its radically insubstantial status sufficiently clear to ward off the problems posed by the regress arguments" (1966, 364); and W. J. Prior states that the ontology described by Timaeus is "insusceptible to the Third Man Argument" (1989, 138) because Timaeus' account does not admit the self-predication of the Forms (1989, 138–46). Unfortunately, attempts to show that Timaeus is not committed to a regress come dangerously close to committing him to a contradiction: if the Form and that which participates in the Form do not have a common character, we can no longer account for resemblance in the usual way.[2] Thus, these commentators have not really shown that Timaeus' conception of resemblance is any better than Socrates', given that their defence of Timaeus makes resemblance inexplicable.

The goals of this chapter are to tease out an account of resemblance from the *Timaeus,* and then to determine whether a regress argument analogous to that of the Likeness Regress can be constructed.[3] There are several lengthy passages in Timaeus' speech that are relevant to resemblance; and so our previous strategy of focussing on a short tract and examining all

[2]Lee seems to recognise this problem when he says "Whether his [sc. Timaeus'] ontological doctrine does sufficiently complicate or mitigate his 52a5 description of the image [sc. that images resemble Forms] ... I leave at this point to further discussion and the judgement of each reader" (1966, 364).

[3]We look for an analogous argument and not an identical argument, because the terminology in the *Parmenides* is different from that in the *Timaeus.* For example, though Timaeus talks about resemblance, he never speaks of participation (μετέχειν or μεταλαμβάνειν). Thus, the regress argument cannot be the same as the Likeness Regress, but must be tailored to the *Timaeus*, since the former depends on an explicit relation of participation. There are other important differences as well, but none so radical that they prevent us from talking about an argument that is analogous.

the details in miniscule will not serve us well here. Instead, we will conduct a wide-ranging exposition of the three kinds (γένη) of objects that make up Timaeus' universe, as an understanding of these is fundamental to resemblance. Then, we will develop a theory of how resemblance works according to this exposition. Finally, we will attempt to construct a regress argument analogous to the Likeness Regress, on the basis of this theory of resemblance.[4]

4.1 The Three Kinds

The overall purpose of Timaeus' speech is to articulate the nature of the universe, beginning with the origin of the world, and concluding with the nature of human beings (27a5–7). The universe that Timaeus describes is composed of three kinds — Forms, particulars[5] and the Receptacle.[6] The resemblance relation that interests us is between the first two kinds; but the intimate relation between that which becomes and the Receptacle means that an investigation of resemblance cannot ignore the Receptacle.

Details about the kinds are scattered throughout Timaeus' speech, and so we shall cover a great deal of ground in our exposition. As guide, we shall use the Summary (52a1–d1).[7] This is the section of his speech where

[4]One might question the legitimacy of our project, since it is all but certain Timaeus does not have the Likeness Regress in mind when he speaks about resemblance, and it may seem a stretch to bring the "likely story" (29c7–d2) of a Locrian astronomer to bear on a discussion that a young Socrates had with Parmenides. But our project is not quite so coherent as this objection assumes. In what follows, we want to determine whether resemblance in the *Timaeus* is vulnerable to an argument analogous to that of the Regress, nothing more. Questions concerning the implications of Timaeus' speech for Plato's metaphysics are not our present concern.

[5]I call the objects of the second kind "particulars"; but it will become clear from our analysis that particulars in the *Timaeus* are very different from particulars in the *Parmenides*.

[6]This tripartite division of the universe fails to account for the Demiurge, who is eternal (34a9) but also acts on the world (28c2–5), and so is neither particular nor Form. Also, created souls have immortal and mortal aspects (42e7–8, 69c5–70c1), and as such they seems to be intermediate between being and becoming (cf. Cornford 1937, 146: "The sowing of the immortal souls in the Earth and the planets, the instrument of Time, may symbolise that the soul possesses that intermediate kind of existence which partakes both of real being and of becoming.")

[7]We shall refer to this key passage as the "Summary," since it is here that Timaeus gives a concise and comparative account of the three kinds.

Timaeus catalogues the properties of the three kinds, and pays special attention to the relations between them; thus, it works quite well as a touchstone for our exposition. We shall begin with a translation of the Summary and some preliminary comments. Then, we shall look at the Receptacle, particulars and Forms (reversing the order of their appearance in the Summary), first looking at what Timaeus has to say about each kind in the Summary, and then drawing in additional materials as necessary and discussing interpretive difficulties that arise.

4.1.1 The Summary

Timaeus' speech begins with a distinction between Forms and particulars (27d5–28a1) and makes no mention of the Receptacle.[8] This omission is serious enough that it compels Timaeus to make a second beginning, complete with an introduction of the Receptacle (48e2–49a7). He goes on to discuss the kinds, which are now three, at some length (49a7–52a1); and this discussion culminates with the following Summary (52a1–d1):

> Since these things[9] are so, one must agree that a first [kind][10] a1
> is that Form which is always in the same state,[11] ungenerated
> and indestructible, neither receiving into itself anything else
> from anywhere else, nor itself going into anything else anywhere,
> invisible and otherwise imperceptible, and of course it has fallen

[8]Timaeus' distinction is actually between "that which is (τὸ ὄν)" and "that which becomes (τὸ γιγνόμενον)" (27d6). "Form (εἶδος)" comes into currency later in his speech (e.g., 51a4, 51c5, 51d5).

[9]On my reading, τουτῶν refers back to the description of the world from the second beginning on (48e2ff.); this description is cited as a reason to agree to the Summary.

[10]Though three kinds are described (52a1-5, a5-8, a8-b6), only the last is described as a kind (τρίτον ... γένος, a8).

[11]Taking τὸ with εἶδος, with F. M. Cornford. It would also be possible to take τὸ with ἔχον, with D. Zeyl, giving us "that which keeps its own form unchangingly." The difference is significant, because the former suggests εἶδος is the technical term with which Socrates would be familiar, whereas the latter suggests that εἶδος is a property of the first kind (it is unlikely to be a technical term if τὸ goes with ἔχον, since this would mean that a Form is that which keeps its own Form unchangingly; but it does not make sense to say a Form has a Form). The former reading is slightly more plausible, since Timaeus has previously identified εἴδη as a kind of existing object (51d4-5), and so it seems reasonable for it to appear as one of the kinds in the Summary. Note that this interpretation requires ἔχον to be attributive even though it is in the predicative position following εἶδος.

to thinking to examine it; that a second [kind] is that which has a5
the same name as and is like that [first kind],[12] perceptible, generated, always having been borne along, both coming into being in some place and perishing again from there, comprehended by opinion with the help[13] of perception; that a third kind, in a8
addition, is space, always existing,[14] not admitting of destruction, providing a location for all such things as have generation, itself apprehended by a sort of supposititious[15] reasoning, hardly an object of belief; indeed in relation to it we dream with our eyes b3
open,[16] and we say that it is necessary for everything that is to be somewhere in some place and occupying some space, and that that which is neither on earth nor somewhere in heaven is nothing.

Because of this dreaming, having roused ourselves and hav- b6
ing determined all these things and others related to them, even concerning the unsleeping and truly existing nature, we become unable to speak the truth — that on the one hand, for an im- c2
age, since it is not, in relation to itself, that very thing with reference to which it has come to be, but is an appearance of something else, always being borne along,[17] it stands to reason that it comes to be in something else, somehow clinging to being, or that it is nothing at all; but on the other hand, for that c5

[12]Following Conford and Zeyl in supposing ἐκείνῳ refers back to τοῦτο (a4).

[13]Translating μετ' in a secondary sense for the genitive, which means "by aid of" or "in coöperation with."

[14]Taking ἀεί with ὄν with Cornford (1937, 192 n. 1), instead of equating ἀεί with ἑκάστοτε ("in every case") with A. E. Taylor (1928, 343). The former reading emphasises a sharp contrast with the second kind, and also does not introduce an equation that is not required to make sense of the sentence.

[15]I use "supposititious" instead of "bastard" (cf. Cornford 1937, 192; Zeyl 1997, 1255), because the former preserves the sense of νόθος that means "illegitimate," and also describes a particular type of reasoning.

[16]Following Taylor's suggested translation of πρὸς ὃ δὴ ὀνειροπολοῦμεν βλέποντες (1928, 346).

[17]A notoriously difficult passage to translate. I follow G. L. Pendrick in taking εἰκών (from εἰκόνι) as the assumed subject of ἐστιν, and αὐτὸ τοῦτο as the predicate; but this prevents ἑαυτῆς from being taken as a possessive genitive. The solution is to take ἑαυτῆς as a 'genitive of relation' (cf. Pendrick 1998, 558–9). For the debate surrounding this sentence, see Taylor (1928, 349–9), Cornford (1937, 370–1), Patterson's discussion (1985, 44–6), and G. L. Pendrick's discussion (1998, 556–9).

> which actually exists, the precisely true account is the support — that as long as one of them is one thing and the other is another, neither of the two ever comes to be in the other in such a way that they would become at the same time one and the same, and two.

The structure of the Summary is such that for each kind Timaeus provides a basic description, states how it is apprehended, and explains how it is related to the other kinds (cf. Cornford 1937, 193). But whereas the Summary follows this structure in a straightforward manner for Forms and particulars, how the Receptacle is related to Forms and particulars seems to be interrupted by the Dream.

A significant portion of the Summary is concerned with the Dream and its consequences (52b3–d1). The Dream is the false belief that everything that exists must be in some place and occupy some space (b3–6). This belief obscures two truths: the first is that images come to be in something else (c4–c5)[18] and the second is that the Receptacle does not come to be in the Forms, and the Forms do not come to be in the Receptacle (c8–9). Thus, far from interrupting the treatment of how the Receptacle is related to Forms and particulars, the Dream and its consequences turn out to be an extended discussion of these relations.

4.1.2 The Receptacle

The Receptacle (ὑποδοχή, 49a6, 51a6) goes by many names: it is identified with space in the Summary (52b1), and is elsewhere called "nurse" (49a7), "mother" (51a5) and "that nature which receives all bodies" (50b7–8). This multiplicity of names may be a function of its nature, which Timaeus warns is "difficult and obscure" (49a3). But despite its difficulty and obscurity, it is important for us to have as firm a grasp as possible on the Receptacle, since it plays an essential part in the relation between Forms and particulars.

Timaeus begins his description of the Receptacle in the Summary by

[18] At first, this might seem like a repetition of the images in the dream. But as we shall see presently, what it means for a particular to come to be in something else, according to the first truth, is quite different from what it means for a particular to be in some place, according to the Dream.

identifying the Receptacle with space (χώρα).[19] It might seem curious that Timaeus does not make this identification prior to the Summary, but perhaps he delayed using the more common term so that our understanding of the Receptacle would not be impeded by any preconceptions we may have about space. Whatever his reasons, the conception of space that appears in the *Timaeus* is unique, and as such we ought to take care not to go beyond the account Timaeus presents in his speech.

The Receptacle is like the Forms, but unlike particulars, in that it always exists (52a8–b1) and does not admit of destruction (b1). One of the main functions of the Receptacle is to provide a location for that which is generated (b1–2) — which means that the Receptacle provides a location for particulars (which are generated, a6), but not for Forms (which are ungenerated, a2).

The way in which the Receptacle is apprehended is somewhat puzzling: according to Timaeus, it is by "supposititious reasoning" that it is known (52b3). The problem is that it is not obvious what sort of reasoning is involved, or why it is illegitimate. A possible explanation of how we apprehend the Receptacle is that we reason about the space that is occupied by particulars: once we notice that everything we perceive is in some place and occupies some space (b5), we infer that there must be something in which everything that exists is located. Furthermore, by noting that when a particular perishes, the place occupied by that particular does not perish but instead becomes available for another particular, we infer that the Receptacle must have an existence independent of particulars.

But we can see why Timaeus might describe this sort of reasoning as "supposititious." First, we are reasoning about that which is devoid of character (50d7–e1), and so when we reason about the Receptacle, what it is exactly that the mind is thinking about is not obvious. Second, our notions of space proceed in part from our perceptions of particulars; particulars are objects of opinion (52a8), not of thought; yet we seem to be involving them in our reasoning about the Receptacle. Third, though there is reason to think that the Receptacle is not apprehended by thought, neither is it an object of opinion (it is "hardly an object of belief," b3); and so it is

[19]It is curious that Timaeus does not say that the third kind is ἡ χώρα, but rather τὸ τῆς χώρας. It is possible that a τὸ has dropped out prior to γένος, giving us αὖ τὸ γένος (cf. Cod. Palatinus Vaticanus 173, a8). But it seems more likely to me that γένος is the implied completion of τὸ, emphasising that χώρα is being used in a technical way.

apprehended by that which is neither opinion nor thought, but which seems more like thought than opinion (hence, "supposititious").

The Dream

Now that we have an idea of what the Receptacle is and how it is apprehended, Timaeus moves to the description of how the Receptacle is related to Forms and particulars, in the Dream and its consequences. The dreamer labours under the belief that nothing exists beyond what is in the Receptacle.[20] The Dream obscures two truths (52c2–5, c5–d1) that are easy enough to articulate; but it is by no means easy to explain how these truths follow from the evidence Timaeus gives for them.

We may construe the First Truth as an argument whose premiss and conclusion are quite clear, but whose inference is not. The premiss is that an image does not come to be with reference to itself, but rather is an appearance of something else[21] and is always being borne along.[22] The conclusion is that the particular comes to be in something else (that is, the Receptacle).[23] Thus, the problem before us is how to connect the claim that particulars come to be *with reference to something else* and are always borne along, with the claim that particulars come to be *in something else.*[24]

[20]The Dream is almost certainly an allusion to the *Republic* (476c2–7): "What about someone who believes in beautiful things, but doesn't believe in the beautiful itself and isn't able to follow anyone who could lead him to the knowledge of it? Isn't this dreaming: whether asleep or awake, to think that a likeness is not a likeness but rather the things itself that it is like?"

[21]"Image" must be inclusive of particulars, since particulars are images in the sense of being like Forms; similarly, "something else" must be inclusive of Forms, since Forms are that of which particulars are images (cf. 52a5).

[22]ἀεί φέρεται (52c3) is an echo of πεφορημένον ἀεί (a6); the latter is part of the initial treatment of particulars in the Summary.

[23]We omit an analysis of "somehow clinging to being, or that it is nothing at all" in our treatment of the argument, on the assumption that these phrases further qualify the way in which the particular comes to be in the Receptacle; but such additional qualifications are not relevant to our immediate concern, which is why we should think particulars come to be in the Receptacle in the first place. Looking at the qualifications themselves, "somehow clinging to being" is a reference to the unexplained way in which the particular appears in the Receptacle; and "or that it is nothing at all" means that a particular cannot exist except as an appearance in the Receptacle.

[24]Cf. Taylor (1928, 348): "The connexion of thought is that since from its very nature an image is the image *of* something else, it is very proper that it should appear *in* something else." But while Taylor articulates the problem, he does not offer a solution.

A simple solution to this problem would be to interpret the particular "always being borne along" to mean that the particular has its existence in something else. Hence, it would be clear that the particular must exist in the Receptacle, because nothing exists in Forms (52a2–3). The difficulty with this solution is that it is virtually circular, given that the only way for something to exist in something else is for it to exist in the Receptacle; and it also ignores the first part of the premiss that says the particular comes to be not with reference to itself but as an appearance of the Form.

A more satisfactory (but more complex) solution is to find in the description of the particular as an image an analogy to the reflexion in a mirror.[25] The reflexion of my scarf in the mirror exhibits two dependencies: it is dependent for its existence on the scarf around my neck; and it is dependent for its existence on the mirror reflecting light. Speaking generally, the image depends on the original of which it is a reflexion, and the medium that produces reflexions. Hence, mirror images do not exist without qualification, but rather they exist in something else.[26] Similarly, perhaps whatever exhibits these dependencies is not said to exist without qualification, but rather is said to exist in something else.

With this in hand, we can substantiate the connexion between coming to be with reference to something else and always being borne along, and coming to be in something else. The premiss effectively becomes an explicit statement of the dependencies exhibited by a particular: first, when he claims that a particular does not come to be with reference to itself, but rather is an appearance of the Form, Timaeus is pointing out that the particular is dependent on the Form; and second, when he claims that a particular is always borne along, Timaeus is pointing out that the particular is dependent on the Receptacle.[27] But if our analogy to the reflexion in the mirror holds, these dependencies are grounds to assert that the particular must also exist in something else.

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[25]The strategy of comparing the Receptacle to a mirror is a favourite among commentators: cf. Taylor 1928, 348–9; Cornford 1937, 194; Lee 1966, 364–6; Prior 1983, 133, 135

[26]This sense of ἐν, with reference to a reflective surface, has a precedent in the *Republic* (509e1-510a3): "the images in water and in all that is close-packed, smooth and bright (τὰ τοῖς ὕδασι φαντάσματα καὶ ἐν τοῖς ὅσα πυκνά τε καί λεῖα καὶ φανὰ συνέστηκεν)."

[27]This is not the same argument that we just rejected for being virtually circular. The circularity is not present here because, on this interpretation, that which is said to exist "in something else" exhibits two dependencies; but saying that a particular is always borne along only accounts for one of these dependencies.

The way we should understand the Second Truth is no clearer. The point must be that the Receptacle does not come to be in the Forms, and the Forms do not come to be in the Receptacle. This is a reiteration of the earlier point that the Form neither receives anything else nor goes into another (52a2–4); but whereas the latter is stated in terms of the Forms alone, the former is stated in terms of both the Forms and the Receptacle. Nevertheless, Timaeus does not express himself in a straightforward manner: he imagines. as a consequence of either a Form being in the Receptacle or the Receptacle being in a Form, that "they would become at the same time one and the same, and two" (d1).

Commentators tend to focus on what would happen if the Forms came to be in the Receptacle (cf. Taylor 1928, 349; Cornford 1937, 195–6); but Timaeus wants to discount both the possibility of the Forms' coming to be in the Receptacle, and of the Receptacle's coming to be in the Forms. An explanation that is more complete than that offered by commentators is to invoke a notion of parts and wholes in our interpretation of one kind being "in" another. According to Aristotle, the primary sense of "in" is the sense in which content is in a vessel; but this also means that the content and the vessel are distinguishable parts of the content-and-vessel considered together as a whole (cf. *Phys.* 210a23–9; *Met.* Δ 23). If we consider the Form coming to be in the Receptacle as content coming to be in a vessel, then we may think of them as two, since they are distinct parts; but we may also think of them as one, since they are a content-and-vessel whole. The same result obtains if we think of the Receptacle as the content and the Form as the vessel. But this leads to a possible justification of the consequence imagined by Timaeus: if either kind comes to be in the other, then they would be at the same time one and the same, and two. The drawback of this interpretation is that the result is not absurd: there is nothing wrong with something being both one and two at the same time, according to this understanding. But if we add the presupposition that being one and two in this way would prevent images from appearing in the Receptacle (for the only way images may be in the Receptacle is for the Form not to be part of the Receptacle, and the Receptacle not to be part of the Form), we may have something like the absurdity intended by Timaeus.

What remains is to connect these truths to the Dream. If we labour under the false belief of the Dream, we cannot believe the First Truth; for if everything that exists is in the Receptacle, it does not make sense to say that the particular comes to be in something else (in the special sense

of being "in something else" that is indicative of the two dependencies). Furthermore, we cannot believe at least part of the Second Truth, since Forms not being in the Receptacle directly contradicts the belief of the Dream.

Analogies of the Receptacle

Any thorough treatment of the Receptacle must look beyond the Summary to the three analogies of the Receptacle. These appear in Timaeus' speech prior to the Summary, as part of efforts to elucidate the difficult and obscure nature of the Receptacle, and they contain much that is not mentioned in the Summary. The three analogies are the analogy to gold, the analogy to a mother, and the analogy to perfume and soft materials.

Gold. In the analogy to gold, Timaeus imagines an artisan constantly fashioning and refashioning gold into every shape; and he indicates that what follows the analogy is an explanation of how the analogy applies to the Receptacle, when he says that "the same account [sc. given of the gold] holds of that nature which receives all bodies" (50b7 8). But in fact, the analogy is in part an illustration of the technical discussion in the previous paragraph (49b7–50a4), and Timaeus follows the analogy with a discussion of properties of the Receptacle that can be drawn from the analogy by extension, but are not explicitly described in the analogy. Thus, we must look at both the analogy and the explanation, for they are not equivalent (50a4–c6):

> But I should be willing to speak about it again, still more a4
> clearly. Suppose someone moulded shapes of every sort in gold,
> and did not stop remoulding each into every other, and suppose
> someone pointed to one of [the shapes] and asked what it is at
> that moment, it would be safest by far with respect to truth to b2
> say that that it is gold, but never to speak of the triangle and
> other shapes coming to be in it as being, which change in the
> midst of [a name] being assigned; but therefore to be content if b5
> [the shapes] are willing to receive "such" with some safety.
>
> Now the same account also holds for the nature which re- b7
> ceives all bodies. It must always be addressed in the same [way];
> for it does not depart at all from its own capacity — for it always b10

> receives all things, and never has acquired in any way whatsoever any character (μορφὴν) like anything that enters it; for by nature it abides as a matrix for everything,[28] being moved and shaped by those which enter it, and on account of these appears different at different times — but those which enter and leave it are imitations of those things that always are, modelled after them in some marvellous way that is hard to describe, which we shall consider later. c2 c4

The analogy begins by illustrating the difficulty of naming the particulars that come to be in the Receptacle: we cannot name a particular shape in the gold, because even as we name it, it changes into another shape. If we want to give what comes to be in the gold a name, we have two options: the first is not to name the shape at all, but rather to name the material; the second is to call the shape a τὸ τοιοῦτον (50b5–6). The second way of naming shapes in the gold is clearly a reference to the previous passage, where Timaeus argues that whatever comes to be in the Receptacle changes so quickly that it should not be called a τόδε, which implies permanence, but a τὸ τοιοῦτον (49b7–50a4).[29] We shall not delve into this controversial passage here; but the upshot is that the Receptacle and Forms have a permanence that is not shared by particulars.

In what follows, Timaeus goes on to discuss the properties of the Receptacle itself, making three additional points. First, in receiving particulars into itself, the Receptacle does not take on the character of that which enters it (50b8–c1). Second, the nature of the Receptacle is to lie as a recipient for every impression (c1). Third, in receiving particulars into itself, the Receptacle appears different at different times (c3–4). It may seem

[28]Following Cornford's translation of ἐκμαγεῖον ... παντὶ (1937, 182).

[29]There is much controversy over the meaning of this passage, and in particular what "τὸ τοιοῦτον" signifies. The eye of the storm is the question of whether particulars possess any determinate character. According to Cherniss, "no part of the phenomenal flux can be distinguished from any other" (1954, 128); whereas Cornford offers a reading that suggests the objects of becoming do have determinate characters (1937, 181). Each scholar has those who agree substantially but suggest variations (e.g., Gulley (1960) and Prior (1983) follow Cornford: Lee (1967) follows Cherniss). Without addressing all the details of this controversy, it seems that Cornford's position is stronger, if indeed Cherniss's reading commits Timaeus to a fourfold division of kinds (cf. Mills 1968, 153–4); and if τὸ τοιοῦτον is described as that which resembles the Forms, since we need to distinguish that which resembles a certain Form from that which resembles a different Form.

contradictory that the Receptacle does not take on any character, and that it appears differently at different times; for an appearance seems to be the result of taking on some character. We might even add, as evidence of this connexion, that according to Timaeus, when the Receptacle appears as fire, it is ignited, and when it appears as water it is dampened (51b4–6).

But if we keep the analogy to gold firmly in mind, we can see that Timaeus is not contradicting himself. The gold remains the same with respect to material, but changes with respect to shape. So too, if the Receptacle remains the same in one respect, and changes in another respect, the contradiction evaporates. Of course, the problem then becomes how to articulate the relevant respects; but in this we (again) get some help by likening the Receptacle to a mirror. The surface of the mirror provides a place for reflexions, and in this respect the mirror does not change; but the reflexions that pass across the face of the mirror may be changing constantly. Hence, just as the mirror provides a place for reflexions and does not change in this respect, so too the Receptacle provides a place for particulars and does not change in this respect. And just as the mirror changes with respect to what it reflects, so too the Receptacle changes with respect to what appears in it. But because the respect in which it changes is different from the respect in which it stays the same, we may say that the Receptacle both appears differently at different times, and does not take on the characters of that which enters it.

Note that comparing the Receptacle to a mirror is not a move that Timaeus himself makes. Timaeus compares particulars in the Receptacle to impressions (cf. c1–5, perhaps staying close to the gold analogy, since gold coins may be stamped; or perhaps shifting to the metaphor of a wax tablet, since impressions may be made in wax). But the same points may be made about this analogy, if we suppose that the respect in which the Receptacle is unchanging is analogous to the coin or tablet, and the respect in which the Receptacle is changing is analogous to the stamp on a coin or the impressions in the wax. Timaeus declines to say how the impressions in the Receptacle are made; but this is not as important as the comparison itself, for it shows that our mirror analogy is on the right track.

We can now see that we do not have a simple analogy to gold followed by an elaboration of this analogy in terms of the Receptacle. Instead, both the analogy and the elaboration independently contribute to our understanding of the Receptacle. From this passage, we have learned that the Receptacle has a permanence that is not shared by that which appears in it; and that

there is a respect in which the Receptacle is changeless (related to the capacity of the Receptacle to receive particulars), and a respect in which the Receptacle changes (related to the appearances of particulars).

Mother. The analogy to a mother is of little help to us in elucidating the nature of the Receptacle. It depends on our understanding of what Timaeus thinks is the rôle of a mother during conception and gestation, but we have no evidence of Timaeus' views beyond the analogy itself (50c6–d4):

> Then at present, it is necessary to keep in mind three kinds [of objects]: that which comes to be, that in which it comes to be, and that from which that which comes to be emerges by being likened [to it]. And in fact, it is fitting to compare that which receives to a mother, that from which [that which comes to be emerges] to a father, and the nature between them to their offspring. c6 d2

Cornford suggests that Timaeus' views about conception and gestation are comparable to those of quite a variety of thinkers (1937, 187; 187 n. 1); but the reasoning here is in the wrong direction. We are inferring from what we know about the Receptacle (that it is a place for particulars, that the Receptacle does not interfere with the appearance of particulars), to Timaeus' views about a mother (that the mother is a place for particulars, that the mother contributes nothing to the makeup of the child). The efforts of Cornford are both impressive and plausible; but it is what we know about properties of the Receptacle that is illuminating Timaeus' views concerning reproduction, not the other way around. And since we know nothing of Timaeus' views on this subject, the analogy to a mother takes us nowhere.

Perfume and Soft Materials. The analogy to perfume and soft materials appears as part of an argument to support the claim that if the Receptacle is to receive all the different sorts of particulars that exist, it must be devoid of any character it may receive. In accordance with what we have gleaned from the analogy to gold, the Receptacle must be devoid of character in the same respect in which it changes, since the motivation for holding that the Receptacle is devoid of character is that it must be able to accept any impression. Here is what Timaeus says (50d4–51b1):

> [It is necessary ...][30] also to think that if there is going to d4
> be a varying impression of all the diversity that there is to see,
> that thing itself, in which the impression comes to be set, would
> not otherwise be well prepared unless it is devoid (ἄμορφος) of
> all those characters[31] which it is going to receive from elsewhere.
> For if it were like some of those coming into it, whenever things e1
> of the opposite nature and things of an altogether different na-
> ture came into it, as it received them it would be likened badly,
> since its own appearance would show alongside. Wherefore that e4
> which receives in itself all kinds must be wholly without charac-
> ter (εἰδῶν). Just as those who prepare fragrant ointments with e6
> skill, beginning first with the [ointment] itself, make the liquids
> that are going to receive the scents as odourless as possible; and e8
> those who set to work at impressing shapes in soft materials will
> permit absolutely no shape to start out being visible, but lev-
> elling [the material] beforehand, make it as smooth as possible;
> so too in the same way, for that which is duly going to receive a1
> throughout its whole self and often the likenesses of all those
> that always are, it is fitting for it to be by nature without any
> characters.
>
> For this reason, then, let us not call the mother and Recepta- a4
> cle of what has come to be, visible and in every way perceptible,
> either earth, or air, or fire, or water, either those things which
> have come into being from them, or those things from which
> they have come into being. But if we call it a sort of invisible a8
> and characterless (ἄμορφον) kind, all-receiving, participating in
> some most perplexing way in the intelligible and very hard to
> comprehend, we shall not be mistaken.

The idea here is that a perfumer is attempting to add a particular scent to a liquid; and if the liquid is not odourless, the preëxisting odour will interfere with the reception of the intended scent. Similarly, supposing that

[30]Following Cornford in supposing that νοῆσαι depends not on πρέπει (50d2), but on χρή (c7) (1937, 185 n. 1).

[31]Presumably ἰδεῶν is not used in a technical way here, since Forms do not come to be in anything else (52a3–4); similarly εἰδῶν (e4) below. Cf. Cornford (1937, 186 n. 1). We translate both of these words as "character" to be consistent with our terminology hitherto; but "form" would perhaps be more true to the original.

an artisan is attempting to impress a certain shape on a soft material, if the material has a shape of its own, the preëxisting shape will interfere with the reception of the intended shape. So too, if the Receptacle is not devoid of all those characters it may receive, the preëxisting character of the Receptacle will interfere with the appearance of the particular in the Receptacle.

While Timaeus' position is clear, a rather serious objection may be raised against it. It would seem that if the Receptacle had a pervasive, visible character that interferes uniformly with all appearances, it need not prevent the entire variety of appearances from appearing.[32] For example, suppose that the Receptacle, instead of being colourless, has a tint that makes it slightly green. In this case, we expect the green tint to interfere with all the possible visible appearances in the Receptacle; in particular, any colours would appear slightly greener than they would otherwise be.

But this would not, in itself, prevent the entire range of visible appearances from appearing. Timaeus conceives of particulars in the Receptacle as impressions in a material. Thus, an appearance would presumably be without a green tint if its character were the opposite of that impression that corresponds to the tint (for its impression would negate the tint). If the green tint may be so negated, then although the Receptacle would interfere with the reception of each character, it would still be possible for the entire variety of appearances to appear. We might wonder about everything being tinted green by such a Receptacle; but for any visible character a particular might have, the corresponding Form cannot have the same character (for Forms are not visible). Thus, no direct comparison would be possible, and so it is likely that we would not even notice.

It seems that we can strengthen Timaeus' argument in the face of this objection by making his point more specific: it is not that a characterless Receptacle is required to receive the entire variety of appearances, but rather that a characterless Receptacle is required to receive the entire variety of appearances without interfering with them in the process (where "interference" is defined as modifying the character of the appearance when compared to the appearance in a characterless Receptacle). This argument has the appearance of being circular, since we seem to be stipulating that

[32]The following holds for at least one visible character, which is all that is required for the objection to work; but it is clear that other characters may interfere with appearances in a way that restricts variety (for example, the character of being extended).

"interference" occurs if a particular appears in the Receptacle that is not characterless. Nevertheless, we could know (theoretically at least) the details of how appearances of Forms come to be in the Receptacle (something which Timaeus say is both marvellous and hard to describe, 50c5–6); and with such knowledge, "interference" could be defined, and thus the argument would not be circular.

4.1.3 Particulars

The first thing Timaeus says about particulars in the Summary is that they have the same name as (ὁμώνυμον, a5) and are like (ὅμοιόν, a5) the Forms. This is of particular significance, since the language Timaeus uses recalls the language of the Likeness Regress. ὁμώνυμον is etymologically related to the word Parmenides uses when he proposes (and Socrates accepts) that particulars get their names (ἐπωνυμίας, 130e6) from the Forms; and ὅμοιόν is a form of Parmenides' preferred word to describe the resemblance relation in the Likeness Regress (forms of ὅμοιος appear twelve times in 132d7–133a3). While we are on the topic of language, we should also note that in the First Truth, Timaeus calls a particular an image (εἰκόνι, c2); and εἰκόνι is etymologically related to the verb Socrates uses first in the Likeness Regress to describe the relation between Forms and particulars (ἔοικεναι, 132d3). It seems unlikely that these overlaps of terminology are coincidental; rather they establish a firm connexion between the two dialogues on the issue of resemblance. As for what Timaeus means by these words, we shall defer addressing this question until we have completed our exposition of the three kinds.

Particulars are perceptible (52a6), by which Timaeus means that they are capable of being detected by the senses (if our senses were acute enough), not that they are actually sensed (for there are particulars too small to be sensed, 56b7–c3). Furthermore, particulars are generated, and they come into being and perish (52a6–7). As mentioned in a passage concerning the nature of particulars (49b7–50a4) and emphasised in the analogy to the gold (50a5–b6), this coming into being and perishing amounts to an instability that is so much a part of the nature of particulars, that a given particular should not be called a τόδε but rather a τὸ τοιοῦτον.

The comment about particulars being comprehended "by opinion with the help of perception" (52a8) is parallel to a comment Timaeus makes at the beginning of his speech, that particulars are comprehended "by opinion

with the help of unreasoning (ἀλόγου) perception" (28a2–3). The addition of ἀλόγου does not seem to add to Timaeus' meaning, if only because it is difficult to see how perception could be described as "reasoning." But the linking of opinion with perception is important. The suggestion seems to be that our opinion that we are perceiving a particular is dependent on our perception of various sensible qualities (cf. Taylor 1928, 342–3). For example, our opinion that there is a fire in front of us might be brought about by our perceptions of hot, crackling and flame-colour (πυρρός)[33] emanating from the same place.

Parts and Wholes

Though we have looked at the description of particulars in the Summary and elsewhere, we still do not have a full picture of what a particular is. In the *Parmenides,* we took a particular to be that which, not being a Form, participated in a Form. Hitherto in our analysis of the *Timaeus,* we have used this terminology loosely (despite there being no explicit mention of participation); but we must now be as precise as we can about the nature of particulars. The best way to begin is to look at certain examples; and so we shall start by analysing the nature of a flame.

Flame is the first sort of fire that Timaeus considers (58c5–6), which means that flame is composed of primary bodies that correspond to the Form of Fire (56b4–5). These primary bodies themselves are not individually perceptible on account of their size (56b7–c3); but when a great number of them are clustered together, we perceive this cluster as a flame. That is, we see flame-colour, because there are bodies emanating from the flame that impinge on our ray of sight (67c3–68d8); we hear crackling, because bodies emanating from the flame strike our brain, blood and soul by way of the ears (67a8–c3); and we feel heat, because bodies with sharp edges, sharp angles, and swift motion, emanate from the flame and cut our flesh (61d6–62a5). So the particular that we perceive as a flame is actually a cluster of bodies, and there are bodies that constantly emanate from this cluster which affect our senses.

The primary bodies that correspond to the Form of Fire have the shape of the simplest regular convex solid: a tetrahedron (or pyramid, 56b4), whose sides are four equilateral triangles (see Figure 4.1). Each of these

[33]According to Timaeus' analysis (68c3–4), πυρρός is a combination of ξανθός (auburn?) and φαιός (dun?).

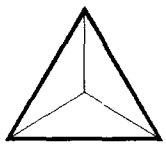

Figure 4.1: Tetrahedron

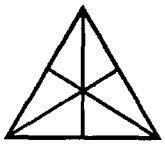

Figure 4.2: Equilateral Surface

sides is composed of six right-angled scalene triangles (see Figure 4.2) and so the tetrahedron is actually composed of twenty-four right-angled scalene triangles (54d6-55a5). Here is Timaeus' analysis of primary bodies in general, which includes the tetrahedron that we have just described (53c5–e1, trans. Zeyl):

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

So, the primary bodies are bodies; bodies have depth; depth is comprehended by surface, and rectilinear surfaces are composed of triangles. Since the primary bodies have the shape of regular solids (tetrahedron, octahedron, icosahedron and cube, 56b3–7), their surfaces are rectilinear, and so they are composed of triangles. These "elementary triangles" are of two sorts: right-angled scalene (for fire, air and water, 54d6–55b3), and right-angled isosceles (for earth, 55b3-c6).

The case of flame is simple, because it is composed of one sort of primary body.[34] But the primary bodies may be combined (51a7) so that

[34]This is not to say that all the primary bodies in the cluster are the same. The tetrahedra themselves are not perfectly shaped, since there are gaps (κενότητα) in the construction of primary bodies (58b4–6; cf. 60e4–7). Furthermore, primary bodies of the same sort are of different sizes due to the differently sized elementary triangles of which they are constructed (57c8–d3). Also, the bodies may have different motions (cf.

Table 4.1: Parts and Wholes

Level	Whole	Part	Examples
a	triangles	—	scalene triangle, isosceles triangle
b	surfaces	triangles	equilateral triangle, square
c	solids	surfaces	tetrahedron, octahedron, cube
d	clusters[a]	solids	flame, tear, glass
e	world[b]	clusters	—

[a]This includes homogenous and non-homogeneous clusters of primary bodies.

[b]Since there is a Form of Living Animal (31b1–2), and the Demiurge makes the world in its image, it seems reasonable to suppose that the totality of the world is also a whole.

we get compounds. In general, most visible objects are compounds, since nothing is visible without fire, and nothing is tangible without earth (31b5–9). Moreover, Timaeus describes certain compounds; for example, a tear is composed of fire and water (68a3–4); and glass is composed of earth and water (61b6–8).[35]

This account of particulars lends itself to analysis in terms of part-whole relations, and suggests a hierarchy, as outlined in Table 4.1.[36] Note that for each level, the whole at that level becomes the part at the succeeding level (with the exception of level *e* which has no succeeding level). Of course, this assumes that there is no slippage among parts and wholes in the hierarchy; by which we mean that a whole at a given level is not a part at any level beyond the succeeding level. For example, triangles are parts of surfaces; but they are not parts of primary bodies (except accidentally, as triangles are parts of surfaces and surfaces are parts of primary bodies).

But now, we can give an account of the sorts of particulars we are accustomed to finding in the *Parmenides:* a particular is a cluster of primary bodies (level *d*). A particular appears to us in a certain region of the Receptacle because of emanations from a cluster that interacts with our senses, causing the perception of the particular in that region. Thus, when we say that there is a particular flame in front of us, what we really mean is that there is a cluster of tetrahedrons that are causing us to perceive flame.

the perception of colour, 67d1–68b1).

[35]Presumably a tear also has an element of earth, insofar as it is tangible; and glass also has an element of fire, insofar as it is visible.

[36]We find a similar hierarchy as part of G. Priest's interesting mistreatment of prime matter in Aristotle (1995, 18–23).

Clearly Timaeus' account of particulars is quite different, and certainly more detailed, than the account we extrapolate from the *Parmenides.*

Furthermore, we have identifiable types of particulars, which is something we do not draw from the pages of the *Parmenides.* That is, it does not seem unreasonable to describe the wholes at levels *a*, *b*, *c* and *e* as particulars as well; they seem to be just like the wholes at level *d* with two exceptions. First, none of them are perceptible; for the solids are too small to be perceived alone (56b7–c3), which implies that surfaces and triangles are also too small to be perceived. And only the Demiurge could apprehend the world as a whole (as opposed to perceiving a part of the world, which would be equivalent to perceiving one or more clusters); but this apprehension could not be in terms of perception, since perception is due to interactions between bodies in the Receptacle, and the Demiurge is not in the Receptacle.

Second, the elementary triangles are different from particulars at levels *b* through *e* in that Timaeus does not describe their parts. His speech implies that they have parts (for their sides must be in certain ratios if they are to be described as isosceles and scalene), but he does not furnish us with an explicit description of these parts.

Elementary Triangles

A question that this account of particulars raises is whether particulars can be ultimately accounted for in terms of elementary triangles. After all, since the part at each level is the whole at the preceding level (with the exception of level *a*, or so it appears from Timaeus' account), it seems that all particulars could at least be expressed in terms of elementary triangles. But this question really reduces to the question of whether the elementary triangles are the ultimate building blocks for particulars; and about this, the answer is not immediately clear.

Timaeus describes the elementary triangles as the ἀρχαί of the primary bodies (53d5), and while mention is made of the parts of surfaces and solids, there is no discussion of line or points as parts of the elementary triangles. Furthermore, Timaeus talks about surfaces and solids breaking up into their constituent parts (for example, water that is compressed may have its surfaces (equilateral triangles) broken up by fire, 61a5; and earth may be broken up by fire's sharpness, 56d1–4); but he never describes an elementary triangle breaking up into parts. This had led some commentators to suppose

that not only are triangles the ultimate building blocks, but also that they are indestructible (cf. Brisson and Meyerstein 1995, 42, 49).

Nevertheless, a lack of evidence concerning the parts or destructibility of the elementary triangles is not the same as positive evidence that they are without parts and indestructible. Furthermore, Timaeus explicitly says that he will not speak of the ἀρχή or ἀρχαί (principle or principles) of all things (48c3); and so when he calls the elementary triangles αρχαί, he must mean that they are that which the primary bodies comprise, not that they are the ultimate principles of particulars. Finally, the elementary triangles come to be in space, and so it seems unlikely that they are indestructible; rather, they are generated and perish just like any other τὸ τοιοῦτον of the Receptacle.

Characters

A second question which our account of particulars raises is the nature of characters, since we have so often said that particulars have characters. In general, the perceptible characters of particulars at level *d* are due to the disposition of their parts. This is because perceptible characters do not belong to the particular itself, but are ascribed by us to particulars in virtue of sensation.[37] For example, a flame appears to have the character of being to the right of a flower, because the solids of which the flame is composed are to the right of the solids of which the flower is composed. And a flame has the character of being hot because there are sharp tetrahedra swiftly emanating from the cluster.

Perceptible characters aside, there seem to be certain characters that are proper to particulars at each level. For example, the characters of the elementary triangles would be the magnitude of the hypotenuse and ratios of sides; and the characters of primary bodies are the size and relative arrangement of their surfaces. The characters of clusters are more varied, but almost certainly include the sorts of primary bodies that make up the cluster, their arrangement and orientation relative to one another, and the various sizes (57c7–d7) and various motions (57d7–58a1) of these primary bodies. Thus, there seems to be nothing preventing us from talking about the characters of particulars, as long as we keep in mind that there are

[37]Cf. Cornford 1937, 205: "But in the absence of any spectator, there are, strictly speaking, no colours — only changes capable of causing such sensations."

restrictions on the sorts of characters that we can talk about regarding particulars at a given level.

4.1.4 Forms

The account of Forms in the Summary is quite brief, and we have touched on many of the properties of Forms, and relations involving Forms, while looking at the Receptacle and at particulars. In contrast to particulars, Forms are always in the same state (that is, unchanging), ungenerated and indestructible (52a1–2). They are like particulars in that they never receive anything. and like the Receptacle in that they never go into something else (a2–3). Furthermore, we do not apprehend Forms with our senses (they are invisible and otherwise imperceptible, a4).

The way in which Forms are apprehended is a matter for some speculation. We learn in the Summary that we come to know Forms through thinking; but earlier, Timaeus says that we come to know Forms through thinking "with the help of reason (λόγου)" (28a1). Part of the emphasis on λόγου is doubtless to set up a contrast with particulars, which as we have seen are apprehended by perception that is ἀλόγου (unreasoning, 28a3). But Timaeus does not tell us what is signified by λόγου. One possibility is that it means something like an account in terms of a definition (cf. *Tht.* 206c1-d6); but we are not given enough information to make this determination with any certainty.

We may be relatively more certain about the scope of the Forms, although determining this is not without its difficulties. The problem is that Timaeus seem to commit himself to the existence of only a few Forms: he explicitly mentions Living Animal (31b1–2) and the Form of Fire (51b8) is mentioned by name; and Timaeus refers indirectly to the Forms of Earth, Water and Air (51a8–b5). But no other Forms are named, and so we might think that the number of Forms in Timaeus' world are few.

Nevertheless, there is plenty of indirect evidence that there are other sorts of Forms. First, in the Summary, Timaeus says that particulars have the same name as the Forms (52a5); and so, we may be inclined to hold that every particular that has a name has a corresponding Form.[38] Second, the Living Animal is said to comprehend within itself all intelligible

[38]Such a claim would be a distant cousin of Socrates' "customary hypothesis" in the last book of the *Republic,* whereby there is a single Form for each of the many things that have the same name (X, 596a5–8).

living animals (30c9), which suggests a multiplicity of Forms of living animals. Third, prior to his proof for the existence of the Forms, Timaeus asks whether the claim that there is an intelligible Form for each thing (εἶδος ἑκάστου νοητόν) is mere talk (51c5–6). ἑκάστου clearly refers back to that which we see and perceive through the body (51c1–2), which suggests that there are Forms for every cluster that may be perceived. Finally, we may add that it does not seem unreasonable (just a little odd) that only the Living Animal and the Forms of the primary bodies are named, since it is with these Forms that Timaeus' speech is specifically concerned. In view of this evidence, we shall proceed as if there is a multitude of Forms, not just a few.

4.2 Resemblance

We have examined the Receptacle, particulars and the Forms, in both the Summary and other passages; and so we are now in a position to posit a theory of resemblance. We have seen in our analysis of the relation between Forms and particulars that a resemblance relation obtains between the two; but Timaeus gives us no explicit guidance as to the nature of this relation. It is worth noting that what follows has an undeniable speculative dimension: although we are using what we have gleaned from Timaeus' speech as a basis for our theory of resemblance, it goes far beyond Timaeus' words. And so, to borrow a phrase from Timaeus himself, what follows is an εἰκὸς μῦθος ("likely story," cf. 29c7–d2).

4.2.1 That Which Resembles Form

Commentators have advanced three hypotheses in answer to the question of what it is that resembles Forms.[39] The first is that the τὸ τοιοῦτον resembles the Forms (Sayre 1998, 111–3; Taylor 1928, 324); the second is that the primordial traces resemble the Forms (Sayre 1998, 110-1); and the third is that the Receptacle resembles the Forms (Sayre 1998, 109; Sweeney 1998, 144; Prior 1983, 132, 136, 137 n. 18). We shall look at these hypotheses in turn, providing a brief summary, and then evaluating them according to our understanding of the Receptacle, particulars and Forms.

[39]In what follows, we respond mainly to Sayre (1998), since he raises this question explicitly, and considers the three possibilities we outline below.

The first hypothesis is that sensible qualities with opposites (described as τὰ τοιαῦτα, 49b7–50a4) are that which resembles Forms. This is the hypothesis Sayre endorses (1998, 111). Examples of these qualities are: hot (52a2), white (50a2), hard and soft (62b7–8), smooth and rough (63e8–11), pleasant and offensive (of odours, 67a1–7), high-pitched and low-pitched, loud and quiet (67a12 c3). There are also Forms that correspond to each of these qualities — Hot, White, Hard, Soft, Smooth, Rough, Pleasant, Offensive, High-pitched, Low-pitched, Loud, Quiet.

The strongest evidence for Sayre's position is found in the explanation of the analogy to gold, where Timaeus says that "the things that enter and leave it are imitations of those things that always are" (50c4–5, cf. Sayre 1998, 111). As we pointed out in our analysis of the analogy of the gold, that which comes to be in the gold is called a τό τοιοῦτον (50b5–6), which is an obvious reference to the sensible qualities (such as hot or white, 50a2) of the earlier passage.

Nevertheless, Sayre seems to be wrong about this. From our analysis of particulars, sensible qualities are the result of emanations, from a cluster of primary bodies, that interact with our senses. So, suppose that we perceive a flower with a pleasant scent. This is because a cluster that appears to us as the flower is emanating a pleasant scent. The sensible qualities envisioned by Sayre cannot be that which resembles the Form, because they are not qualities of the particulars themselves, but rather depend on our perception of them. It may be possible to construe the sensible qualities as the result of resembling the Form; but in this case, it would be that which gives rise to the sensible qualities (i.e., the clusters) that resembles the Form, not the sensible qualities themselves.

The second hypothesis is that the primordial traces are that which resembles the Forms. Timaeus seems to give credence to this hypothesis when he says that the traces reside in the Receptacle, and the Demiurge orders them according to Form and Number (53b3–5). There is not much detail about this process, but presumably the traces of the primary bodies are somewhat like the Forms prior to the intervention of the Demiurge (perhaps malformed, irregular solids), and the Demiurge causes these traces to resemble the Forms when he orders the world.

Still, there is at least one good reason to think that the traces are not that which resembles the Forms: the traces no longer exist once they are ordered by Form and Number. Prior to the ordering of the world. we have traces of fire; but after the world has been ordered, we do not

have traces, but rather primary bodies corresponding to the Form of Fire. Thus, whatever is common to both the traces and the primary bodies is a candidate for resembling the Forms; but the traces themselves are not.[40]

The third hypothesis is that the Receptacle is that which resembles the Forms. In accordance with our reading of the analogies of the Receptacle, we may express this more accurately by saying that the Receptacle resembles the Form in the respect in which the Receptacle changes. Indeed, Timaeus seems to suggest that the Receptacle resembles the Forms when he says that it is ignited or dampened (51b4–5), it turns watery and fiery (52d5), and imprints are pressed upon it (50d4–6, 51a4–7).

But according to our understanding of particulars, the Receptacle's appearing ignited or dampened, turning watery or fiery, is a result of clusters of primary bodies interacting with our senses. In these cases, it is not that the Receptacle resembles the Form, but rather the Receptacle is that in which the resemblance obtains. Again, a pleasant scent may come from a certain region of the Receptacle; but it is the cluster that is emanating from that region that give the region the appearance of being scented.[41]

[40]Sayre objects to this hypothesis, by holding that it leads to the awkward consequence that if the traces are somewhat like the primary bodies, then they have this resemblance "without the prior benefit of participation in the Form by which resemblance of any such sort is supposed to come about" (1998, 111). But there seems to be no reason to think that resemblance cannot obtain by degrees. Surely the traces may resemble their respective Forms to a small degree, and then come to resemble the Forms to a high degree through the agency of the Demiurge.

If the traces resemble Forms in a small degree, we might wonder whether they thereby participate in the Forms. According to Sayre this is impossible, since all participation is initiated by the Demiurge (1998, 111 n. 31). But this is not supported by the text: the Demiurge models the world after the Forms (28b2–29a6), and so it is clear the Demiurge initiates some participation; but we cannot infer from this that the Demiurge initiates all participation. Furthermore, in order to identify the traces as being of a certain sort, we need there to be some rudimentary resemblance between the traces and the Forms. Thus, we should say rather that the Demiurge takes the traces, which resemble the Forms distantly, and turns them into primary bodies, which resemble the Forms quite closely.

[41]Sayre objects to this hypothesis because he supposes that it is a simple misreading of Timaeus' statement that the Receptacle partakes (μεταλαμβάνον) of the intelligible (τοῦ νοητοῦ) (51a8–b1). Sayre is correct on this point: μεταλαμβάνον is not used in a technical sense here, and τοῦ νοητοῦ does not refer to Forms, but rather to the Receptacle being apprehended by a sort of reasoning. However, few commentators base their claim that the Receptacle is that which resembles the Forms, on Timaeus' statement that the Receptacle partakes of the intelligible; so Sayre's objection misses its mark.

A New Hypothesis

It seems that what comes to resemble the Forms is neither the τὸ τοιοῦτον, nor the primordial traces, nor the Receptacle itself. But our rejection of these possibilities has left us with an important clue: that which gives rise to sensible qualities, that which traces and primary bodies have in common, that which makes certain regions of the Receptacle appear watery or fiery, are what we have been calling particulars. And so, perhaps it is the particulars themselves that resemble Forms.

According to our analysis of particulars, a particular is a whole composed of parts. But it is not a whole in the sense of being a heap; rather, its parts are of a certain type, with relative arrangement and orientation, and possibly size and motion. Thus, a particular is a whole of parts, and those parts exhibit a certain structure (appealing to an admittedly extended sense of structure, since we do not want to exclude size and motion from our considerations).

Timaeus seems to confirm our hypothesis, at least in part, when he gives accounts of various particulars: he frequently defines clusters in terms of the primary bodies of which the clusters are composed (cf. 58c5–61c3); and he defines primary bodies in terms of both surfaces and elementary triangles (cf. 54d6–c4). Recall that we interpreted Timaeus' claim that Forms are known by thinking with the help of reason to mean that he has in mind an account in terms of a definition. The accounts he gives of particulars are in terms of the structure of that particular; and so it seems natural to posit that structure is the respect in which particulars resemble Forms.

4.2.2 Structural Patterns

If particulars resemble Forms with respect to structure, then one way to construe Forms is as structural patterns. That is, the Form specifies the way in which the particular is structured, such that any particular having the structure specified by the Form is a particular of the sort named by the Form. The primary body that resembles and has the same name as the Form would have its parts in a certain relative arrangement, orientation, and so on; and if it deviates from this structure, it would neither resemble nor have the same name as the Form. Since the structure of the particular is defined primarily in terms of the parts of which the particular is composed, there

Table 4.2: Structural Patterns

Level	Particular	Parts	Form
a	triangle	—	scalene, isosceles
b	surface	triangles	equilateral, square
c	solid	surfaces	regular polyhedron[a]
d	cluster	solids	complex relations[b]
e	world	clusters	dodecahedron[c]

[a]That is, the tetrahedron (4 equilaterals), cube (6 squares), octahedron (8 equilaterals) or icosahedron (20 equilaterals), but not including the dodecahedron (12 pentagons), since a pentagonal surface cannot be constructed out of either of the two elementary triangles (cf. Cornford 1937, 218).

[b]We say "complex relations" in an attempt to capture the numerous unspecified and multifaceted relations in which the parts of clusters are doubtlessly involved.

[c]The fifth regular solid (the twelve-sided dodecahedron) is the shape of the world (55c4–6). The dodecahedron is unlike the other solids in that the parts of which they are composed are exterior surfaces, whereas the parts of which the dodecahedron is composed are clusters that make up the volume of the world.

will be five levels of Forms that correspond to the five level of particulars (see Table 4.2).

Let us take the cube and Earth as an illustration of the resemblance of particular to Form. A cube has six surfaces, which according to our analysis are six squares of equal size. These six surfaces may be arranged in any number of ways: they may be scattered over large distances, stacked on top of one another, joined on two but not three sides, and so on. But only when they are arranged in a certain way do we say that we have a cube; and with such an arrangement, the primary body of earth comes into being (or alternatively, with such an arrangement, the structure of the particular resembles Earth).

An indication that we are on the right track is that it allows us to explain resemblance between spatial particulars and non-spatial Forms. Timaeus described Forms as paradigms (49a1); yet if we take this to mean that the Form has a certain perceivable character that is copied by the particular, we run into difficulties because the Form itself is not perceivable. But if we conceive of the Form as a structural pattern that is instantiated by the particular, we can account for a resemblance of the particular to the Form by saying that the particular exhibits a spatial structure related to

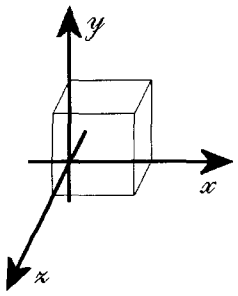

Figure 4.3: Cube Defined by Vectors

the pattern of the Form.

We might wonder whether the Form is capable of being a structural pattern for a spatial particular, if the Form itself is not spatial. But there seems to be no reason to think that such a structural pattern is itself spatial, even if the structural pattern may only be instantiated in spatial terms. For example, we may give an account of the structural pattern of a cube algebraically, as three non-zero vectors $\vec{x}$, $\vec{y}$, $\vec{z}$ in $\mathbb{R}^3$, where $|\vec{x}| = |\vec{y}| = |\vec{z}|$,[42] and where $\vec{x} \cdot \vec{y} = 0$, $\vec{y} \cdot \vec{z} = 0$ and $\vec{x} \cdot \vec{z} = 0$ (see Figure 4.3).[43] Note that this algebraic expression of a cube does not restrict the cube to a particular size, but there are enough restrictions to ensure that the resulting solid is a cube.

In our account of the relation of particulars to Forms, we have focussed on structure mainly with respect to relative arrangement and orientation; but there are other aspects of structure that we have neglected. We have alluded to these aspects, but there is a marked lack of detail about them. For example, Timaeus tells us that a tear is composed of fire and water (68a3–4), but there is no information about the proportions, positions and sizes of the bodies of fire and water. The sensation of heat is due to tetrahedra with swift motion (61e4), but beyond this we are given nothing. Nevertheless, we should keep in mind that these aspects may play a part in the structure of particulars.

[42]That is, where the magnitudes of the vectors are equal.

[43]That is, where the dot products of the vectors are all zero. $\vec{p} \cdot \vec{q} = |\vec{p}||\vec{q}| \cos\theta$, and since $\theta = \frac{\pi}{2}$ when $\vec{p}$ and $\vec{q}$ are perpendicular, the dot product of any pair of vectors, on the basis of which a cube is constructed, must be zero.

4.3 Evaluating the Regress

The goal of this chapter is to determine whether the account of resemblance given in the *Timaeus* can escape the Likeness Regress of the *Parmenides*. We have analysed Timaeus' speech and extracted from it an account of resemblance; so the next step is to see how Timaeus fares when pitted against Parmenides. According to our analysis of Reading A of the Regress, there are four premisses:

(1) $(\exists x_f)(\exists y_f)(\exists u_p)(\exists v_p)(x \neq y \ \& \ u \neq v \ \& \ Px \ \& \ Py \ \& \ Rux \ \& \ Rvy \ \& \ Rux \ \& \ Rvy)$

(2) $(\forall x_d)(\forall y_f)(Mxy \rightarrow Rxy)$

(3) $(\forall x_f)(\forall u_d)(Rux \rightarrow Rxu)$

(4) $(\forall u_d)(\forall v_d)[(Ruv \ \& \ Rvu \ \& \ u \neq v) \rightarrow (\exists x_f)(Mux \ \& \ Mvx \ \& \ x \neq u \ \& \ x \neq v)]$[44]

If these four premisses hold true for the account of resemblance in the *Timaeus,* then the Likeness Regress may be applied here. But it is reasonably clear that these premisses will not be true, for the simple reason that the predicates and relations from the *Parmenides* do not map directly onto the predicates and relations of the *Timaeus.* The most obvious example of this is the participation relation in (2) and (4). Participation is never mentioned by Timaeus, and so it is not without some manipulation that we can bring these premisses to bear on Timaeus' speech. We must keep in mind, therefore, that we are not trying to determine whether the Likeness Regress may be applied here (it cannot), but rather whether an argument analogous to the Likeness Regress may be applied here. The best way to make this determination is to examine the premisses in turn.

The first premiss (1) states that there exist at least two particulars and two Forms, that the Forms stand as paradigms in nature, and that the first particular resembles the first form and the second particular resembles the second Form. This is a reasonable description of the situation

[44](1) There exists at least two Forms (x and y), and two particulars (u and v). The Forms are patterns in nature, and the particulars resemble Forms and are likenesses of Forms; (2) For all objects and all Forms, if an object participates in a Form, then the object resembles that Form; (3) For all Forms and all participants, if the participant resembles the Form, then the Form resembles the participant; (4) For all Forms and participants, if two objects resemble one another, then they both participate in one and the same Form (and that Form is not identical to either of the two objects).

in the *Timaeus:* there are Forms and particulars, the Forms are even described as paradigms (49a1),[45] and there are obvious resemblance relations of particulars to Forms (e.g., 49a1. 52a5, 52c2). There are doubtless some discrepancies between what Socrates considers to be a particular and what Timaeus considers to be a particular; but since it is the resemblance relation that is at the heart of the debate and not the nature of a particular, these details are of little significance for our current inquiry.

What is of great significance is the participation relation that appears in (2) and (4). The second premiss (2) states that the participation relation, between some object in the domain and a Form, is the sufficient condition for a resemblance relation between that object and the Form. Unlike Parmenides, Timaeus never uses "participation" in a technical sense (cf. Sayre 1998, 109 n. 26), and so this premiss is undefined in the context of Timaeus' speech. There are three ways to handle this. First, we may set the extension of M to the null set (i.e., $\emptyset$), which would make (2) true.[46] Nevertheless, this will not make (4) true if R is symmetrical, and so this cannot be the solution for which we are looking. Second, we could argue that although Timaeus does not explicitly mention participation, this notion is lurking in the background, and so we are justified in assuming a participation relation that corresponds to each resemblance relation. But this seems somewhat disingenuous, since it seems we would be putting words in Timaeus' mouth (words whose metaphysical significance cannot be understated); and we took such care not to do this when construing the exchange between Socrates and Parmenides.

Third, we could say that the participation relation in the *Parmenides* is replaced by the resemblance relation in the *Timaeus.* This would change (2) and (4), so that they read as follows:

(2) $(\forall x_d)(\forall y_f)(Rxy \rightarrow Rxy)$

(4) $(\forall u_d)(\forall v_d)[(Ruv \;\&\; Rvu \;\&\; u \neq v) \rightarrow (\exists x_f)(Rux \;\&\; Rvx \;\&\; x \neq u \;\&\; x \neq v)]$

This avoids the pitfalls of the previous solutions, but also does not preclude the possibility of a regress analogous to the Likeness Regress. Furthermore, we might expect such a replacement: on the one hand, μετέχειν and μετα-

[45] Although not as "paradigms in nature"; but if our reading of ἐν τῇ φύσει (133d2) as a contrast with ἐν ψυχαῖς (132b6) holds, then there is no discrepancy to be found here.

[46] Perhaps we might say "true on a technicality" because of the way the arrow works in this formula.

λαμβάνειν suggest that the particular shares in the Form, which gives rise to a puzzle in the *Parmenides* that Timaeus would want to avoid (131a9–e3); on the other hand, Timaeus is not attempting to explain what participation is, and so it is not surprising that he does not refer to it directly. We should note, however, that there is a drawback to assimilating M to R, which is that it makes (2) into a logical truth (whereas its truth is not guaranteed in the *Parmenides*).

Turning to (4) specifically, we might wonder what justification we could have for supposing that if two objects in the domain resemble one another, they resemble some Form. If the objects in question are particulars, this seems reasonable enough based on Timaeus' claims that "there is an intelligible Form for each thing (ἑκάστου)" (51c4–5), since it is clear that ἑκάστου refers to particulars.[47] Thus, if two separate particulars resemble one another, and particulars resemble Forms, then there is a Form that both particulars resemble.

But this leaves us with the question of whether this principle holds if one of the objects is a Form. That is, if we have a particular that resembles a Form, and a Form that resembles a particular, must we posit the existence of an additional Form which both resemble? No definitive answer can be given to this question, because Timaeus does not concern himself with relations between Forms. Thus, we could just as easily answer in the affirmative, on the grounds of a lack of evidence, as in the negative. And so, we must leave the truth of (4) as an open question: it may be true; it may be false.

So far, we have seen that (1) and (2) are certainly true, and we cannot declare that (4) is false. Hence, in order to say definitively that the relation between Forms and particulars in the *Timaeus* is not vulnerable to a regress, we must find that (3) is false. But the truth of (3) depends on whether resemblance is symmetrical or asymmetrical; and so we must now go back to our work on conceptions of resemblance.

4.3.1 Symmetry and Asymmetry

It should come as no surprise at this point that our understanding of resemblance in the *Timaeus* is that the relation is not symmetrical — and by "not symmetrical" we mean that the particular and the Form do not

[47] ἑκάστου refers back to "that which we see and as many other things as we perceive through the body" (51c1–3), which closely parallels the description of particulars in the Summary (52a6).

have the same (or similar) character. But this alone does not allow us to assert that resemblance is asymmetrical. Here is our statement of the sort of resemblance that blocks the regress at (3):

> A particular p resembles a Form F if and only if: There exists a character c' such that p has c', and there exists an essential character, c, such that F has c, and $c = r(c')$, where $r()$ is a function that is not self-inverse.

It follows from this definition that if $c' = r(c)$, then even though c may be neither the same as nor similar to c', the resemblance that obtains will be symmetrical.

The resemblance relation in the *Timaeus* can be adjusted to fit this description. Taking for example a body of the element earth and Earth, the character c' is that of being a cube, and the character c is the non-spatial structural pattern expressed by Earth. It is clear that c' is neither identical nor similar to c, since c' is spatial, whereas c must be non-spatial. But it has yet to be determined whether $r()$ is self-inverse.

Since we do not know the precise nature of $r()$, we can produce no definitive proof that $r()$ is not self-inverse. But we know enough about $r()$ that we can be reasonably certain that it is not self-inverse. $r()$ is a place-holder for some functional relation between a spatial character of a particular and (as output) a non-spatial character of a Form. The character of the particular is expressible in terms of the structure of that particular, and in this way the character of the particular is necessarily spatial (for relative arrangement and orientation of parts, for example, only have meaning in the Receptacle). In contrast, the character of the Form is not a structure of parts; instead, it is a non-spatial pattern of which the structures of particulars of the same name are instances. Therefore, the input and output of $r()$ are different in kind, and so it seems likely that $c' = r(c)$ is undefined. But if this expression is undefined, then it is impossible for $r()$ to be self-inverse.

What we have then, is a situation analogous to the horizontal stretch that we examined in the previous chapter. The transformation function that we considered was such that our input equation would always be stretched horizontally; thus, we knew by looking at the relation of input to output that the transformation function could not be self-inverse. Similarly with $r()$, this function describes a relation between that which is spatial and that which is non-spatial; and so on the basis of this observation alone, we can be confident that the function is not self-inverse.

Thus, we have established that $r()$ is not self-inverse. This means that the resemblance relation in the *Timaeus* is asymmetrical, which allows us to deny the third premiss (3). Note that this interpretation was worked out with respect to Reading A; but it would apply equally well to Reading B: (3) is a premiss common to both readings, and without it being true, no argument analogous to the Likeness Regress can gain traction in the *Timaeus.*

4.3.2 Denial of Symmetry

According to our analysis, the resemblance of particulars to Forms in the *Timaeus* is such that we cannot generate an argument analogous to the Likeness Regress of the *Parmenides.* The resemblance envisioned in Timaeus' speech is asymmetrical, which permits the denial of (3). But we must admit that this judgement is quite speculative in nature: it seems to fit the available evidence, but there are some leaps made to fill out the account of resemblance. Two in particular should give us pause. The first is the conception of Forms as structural patterns. This seems to follow from the analysis of particulars, and it allows us to explain how a spatial object can resemble a non-spatial object. But Timaeus does not explicitly state that Forms are structural patterns, and so there may be other conceptions of Forms that are accompanied by resemblance relations that are not asymmetrical.

Second, we do not have a precise definition of the resemblance of particulars to Forms. Much may be said about it, we may appeal to various helpful analogies, and so on; but until we have a precise definition, that $r()$ is a function that is not self-inverse cannot be proved definitively. It is possible, at least in theory, that some competing definition of resemblance might be advanced such that $r()$ turns out to be self-inverse. Therefore, our findings should be considered supported but somewhat tentative, given that they are drawn from evidence that goes beyond the explicit content of Timaeus' speech in some important respects.

Conclusion

The main results of our project are as follows. First, we worked out the first-order argument-form for the Likeness Regress. We determined that on either Reading A or Reading B, the argument-form comprises four core premisses, plus a series of premisses that describe the regress portion of the argument. Second, we articulated the resemblance relation that is used in the argument of the Likeness Regress. This allows us to explain why Socrates makes the admissions he does, and also see why Parmenides is able to refute him. Third, we provided an interpretation of the regress portion of the argument that shows why the regress is bad. We explained that the regress functions as a *reductio* because of the functional relations between Forms, and did not merely rely on the claim that an infinite number of Forms is an intolerable state of affairs. These are the results that come from our exposition.

The remaining two results come from our analysis. First, we worked out an account of resemblance that would allow Socrates to avoid the consequences of the Likeness Regress. Although there is little basis in the *Parmenides* for substituting this account in place of the account that Socrates and Parmenides assume, it is clear that there is a way out of the regress that preserves Socrates' position. Second, we demonstrated that the refutation of the Likeness Regress need not be considered definitive, since the ontological resources of the *Timaeus* provide a basis for rejecting Parmenides' argument. We accomplished this by showing that the account of resemblance extracted from Timaeus' speech is in accordance with the account of resemblance that would allow Socrates to avoid the consequences of the Likeness Regress.

Two Questions Answered

At the beginning of our project, we said that we wanted to answer two questions concerning the Likeness Regress. The first was what has gone wrong for Socrates; and the second was what may be done to remedy the situation. We are now in a position to answer these questions. The answer to the first question is that Socrates' thesis in the Likeness Regress does not preclude the resemblance relation from being construed as a symmetrical relation. Socrates offers no general treatment of resemblance in the dialogue. Thus when Parmenides suggests, on the ground that particulars resemble Forms, that Forms also resemble particulars, we are not justified in saying that Parmenides is being inconsistent.

We could charge Parmenides with suggesting an interpretation of resemblance that is unsympathetic to Socrates' position; but this line would be difficult to maintain for two reasons. First, Socrates immediately accepts that resemblance is symmetrical when Parmenides proposes it (131d6–9). Second, Socrates' claim that particulars acquire the character of the Form in the respect that and to the degree that they participate in the Form (128e12–129e5) suggests that the resemblance relation is indeed symmetrical. Thus, Parmenides does not seem to have made an illegitimate move in construing resemblance as symmetrical; and it is this that is the root of Socrates' problems in the Regress.

If taking the resemblance relation to be symmetrical is the root of Socrates' problems, then denying the symmetry of resemblance will remedy the situation. Of course, it is tempting to suppose that resemblance is symmetrical by definition. Nevertheless, there seems to be a sense of "resemblance" that indicates an asymmetrical relation. That is, the instance of a pattern seems to resemble the pattern; but this relation is not symmetrical. We might say that the pattern resembles an instance; but the way in which the pattern resembles an instance is different from the way in which an instance resembles the pattern. Thus, if we take Forms to be patterns and particulars to be instances of those patterns, we may construe the resemblance of particulars to Forms as being asymmetrical (or in terms of a function, as a function that is not self-inverse).

With this conception of asymmetrical resemblance in hand, we know what sort of solution would rescue Socrates from the consequences of the Likeness Regress. But it is only when we turn to the *Timaeus* that we have a confirmation that we are on the right track. Timaeus describes an

ontology that is able to overcome the problems in the Regress, provided that we take Forms to be structural patterns, and particulars to be instances of these patterns. Since the conception of particulars we get from Timaeus' speech is that particulars are structures of parts, this fits together rather nicely with the idea the particulars are instances of structural patterns. This understanding of the relation of particulars to Forms has the virtue of explaining how particulars may resemble Forms, even though particulars are spatial and Forms are non-spatial. Furthermore, when the resemblance of particulars to Forms is construed as a function, the function is not self-inverse, which means that the resemblance relation is asymmetrical. Thus, in the ontology of the *Timaeus* we find a solution to Socrates' problems in the *Parmenides.*

Four Questions Raised

There are many questions that emerge from our project and remain unanswered; but here are four of the most significant ones. The first and most troublesome of these questions concerns the way in which Forms are patterns. That is, Timaeus gives us a substantial theory of particulars; but we are told very little about the nature of Forms. Our hypothesis that Forms are structural patterns is not so much confirmed by Timaeus as it is consistent with what Timaeus says. But without a fully worked out account of Forms. we can never be certain that resemblance of particulars to Forms is as we have described it.

The second question concerns the relation of the Likeness Regress to arguments that are part of the same family: the Largeness Regress in the first part of the *Parmenides* (132a–3) and the Third Man Argument as preserved by Alexander of Aphrodisias in his *Commentary on the Metaphysics of Aristotle* (84.21–85.3). It seems likely that our solution to the Likeness Regress coheres with those solutions that suppose the character of the particular is not the same as the character of the Form of the same name; but a detailed study of the Largeness Regress and the Third Man Argument would be required to confirm this. Perhaps the interpretation of these two arguments could shed some new light on our understanding of the Likeness Regress as well.

The third question has to do with the place of the Likeness Regress in the *Parmenides,* particularly with respect to the second half of the dialogue.

The dizzying twists of the paradoxes concerning the One are clearly beyond the scope of our inquiry; but they may have some bearing on our understanding of the resemblance relation. After all. the Like and Unlike make several appearances in the second half (139e7–140b5, 147c1–148d3, 158e1–159b2, 161a7–c2, 165c6–d5); and so it seems reasonable to think that there is some connexion between the Likeness Regress and these occurrences of the Like.

Finally, the fourth question is whether our results have anything to contribute to debates where interpretation of the Likeness Regress plays a key rôle. The sustainability of Socrates' thesis, that participation is for particulars to resemble Forms, is thought to be important for questions regarding whether the *Timaeus* was written before or after the *Parmenides,* and for questions regarding the status of the Forms in the late dialogues. If we are correct in supposing that the regress may be evaded, then this result may give support to the argument that the *Timaeus* was written after the *Parmenides,* since the Likeness Regress is not a definitive refutation of Socrates' thesis. And if Plato does discard the Forms in the late dialogues, it is unlikely that the reason for this was that he saw no way out of the Likeness Regress.

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Colophon

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