INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

UMI
University Microfilms International
A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA
313/761-4700 800/521-0600
A world of particulars: A trope solution to the problem of universals

LaBossiere, Michael Cooper, Ph.D.

The Ohio State University, 1993
A WORLD OF A PARTICULARS:
A TROPE SOLUTION TO THE PROBLEM OF UNIVERSALS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

Michael Cooper LaBossiere, B.A., M.A.

* * * * *

The Ohio State University
1993

Dissertation Committee:
George S. Pappas
Tamar Rudavsky
Marshall W. Swain

Approved by
Adviser
Department of Philosophy
To Barbara
ACKNOWLEDGMENTS

I express sincere appreciation to Professor George Pappas for his guidance and assistance in completing this work. Thanks also goes to the other members of my advisory committee, Professors Tamar Rudavsky and Marshall Swain for their suggestions and comments as well as to the helpful and friendly people of the Graduate School. To my best friend and fiance, Barbara Bender, I offer sincere thanks for her patience, support, and helpful comments.
VITA

April 27, 1966.........................................................Born - Bangor, Maine

1987.................................................................B.A., Marietta College, Marietta, Ohio

1988 - present...........................................Graduate Teaching Associate,
Department of Philosophy,
The Ohio State University

1991.................................................................M.A., The Ohio State University,
Columbus, Ohio

FIELDS OF STUDY

Major Field: Philosophy

Studies in: Metaphysics and Social & Political Philosophy
# TABLE OF CONTENTS

| DEDICATION | ii |
| ACKNOWLEDGMENTS | iii |
| VITA | iv |

**CHAPTER**

<table>
<thead>
<tr>
<th>I. THE PROBLEM OF UNIVERSALS</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 The Problem of Universals</td>
<td>1</td>
</tr>
<tr>
<td>1.2 The Problem of Sameness</td>
<td>9</td>
</tr>
<tr>
<td>1.3 The Problem of Difference</td>
<td>14</td>
</tr>
<tr>
<td>1.4 Particulars and Universals</td>
<td>15</td>
</tr>
<tr>
<td>1.5 The Legitimacy and Importance of the Problem</td>
<td>19</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>II. PROPOSED SOLUTIONS TO THE PROBLEM OF UNIVERSALS</th>
<th>35</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Introduction</td>
<td>35</td>
</tr>
<tr>
<td>2.2 Class Nominalism</td>
<td>36</td>
</tr>
<tr>
<td>2.3 Resemblance Nominalism</td>
<td>43</td>
</tr>
<tr>
<td>2.4 Transcendent Universals</td>
<td>55</td>
</tr>
<tr>
<td>2.5 Immanent Universals</td>
<td>65</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>III. THE ONTOLOGY OF TROPE-RESEMBLANCE THEORY</th>
<th>78</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Introduction</td>
<td>78</td>
</tr>
<tr>
<td>3.2 Tropes, Substances, and Substrata</td>
<td>81</td>
</tr>
<tr>
<td>3.3 Problems with Individuating Substances</td>
<td>92</td>
</tr>
<tr>
<td>3.4 Bundle Theories and Compressence</td>
<td>97</td>
</tr>
<tr>
<td>3.5 Space-Time</td>
<td>100</td>
</tr>
<tr>
<td>3.6 Keith Campbell: Fields and Quasi Tropes</td>
<td>105</td>
</tr>
</tbody>
</table>
1.1 The Problem of Universals

The problem of universals is, in fact, not a single problem. Rather, it encompasses two main problems, the problem of sameness and the problem of difference. Proposed solutions to the problem of sameness are aimed at providing an account of what it is for two tokens to be of the same type. Proposed solutions to the problem of difference are aimed at providing an account of what it is for two tokens to be two individual tokens. Each of these two problems, in turn, heads up a hierarchy of sub problems. In the two sections that follow the nature of these two problems as well as their legitimacy and importance will be discussed. Before a detailed discussion of the sub-problems is entered into, it is appropriate to present a general overview of the work that is to follow.

The main thesis of this work is that the most plausible solution to the problem of universals is a trope-resemblance theory. There are two main aspects of such a view that need to be (briefly) presented, namely tropes and resemblance. Tropes are best understood in contrast with universals. Universals are properties, construed as metaphysical entities, which are such that they can be wholly located or instantiated in more than one location at a time. For example, if a ball in Ohio and a jacket in China are both red, then the red of the ball and the red of the jacket are identical. There is one universal red that is multiply located. Like universals, tropes are properties that are taken to be metaphysical entities. Unlike universals tropes are particulars. This is to say that tropes are restricted to occupying a single location at any given time. Using the example
of the ball and the jacket, the red of the ball and the red of the jacket are not identical. They are (at least) two distinct tropes. Tropes are considered in greater detail in chapters three and four, below. Resemblance, in the trope-resemblance theory, corresponds more or less with the intuitive notion of what resemblance is, namely that two entities resemble one another when they are alike but are not identical. The role that resemblance plays in the proposed solution to the general problem of sameness is best understood by contrasting it with the role identity plays in a universal based solution to the problem. In the example above, on a universal view the two red objects will both be tokens of the type red object in virtue of the fact that they each instantiate the same universal red. On a trope-resemblance view, the two red objects are both tokens of the type red object in virtue of the fact that they each have exactly resembling red tropes as constituents. The details of the trope-resemblance solution to the problem of sameness are presented in chapters four and five.

On the view put forth in this work, objects, such as table and chairs, are composed of various tropes. These objects are differentiated from one another by their constituent tropes. Thus, the solution put forth to the problem of difference is that, in general, two tokens of same type, a and b, will be different tokens when the tropes that constitute a are different from the tropes that constitute b. The actual solution to this problem is far more complex than the simple sketch presented here and it involves accepting space-time realism in order to address certain sub-problems of the problem of difference. The details of this proposed solution to the problem of difference and the proposed solutions to its various sub-problems are located in chapters three and six.

In addition to the trope-resemblance theory being put forth, there are various other contemporary proposed solutions to the problem of universals. Since these theories are incompatible with one another in the sense that they cannot all be correct, they form a
competition class. The master argument for tropes, which is presented in chapter two, is as follows. First this competition class is exhaustive, in the sense that it contains all the current plausible solutions to the problem of universals. Second, all of the other theories suffer from serious defects which trope theory avoids, and hence they should not be accepted. Therefore trope theory is the most plausible theory in the competition class. In addition to the master argument for tropes, the work involves extensive general use of a cost-benefit methodology. The general idea is that metaphysical theories are to be assessed in terms of the benefits they provide relative to their costs. It is argued, throughout this work, that trope-resemblance theory yields substantial benefits relative to its cost. Hence, it is claimed that a trope-resemblance theory should be accepted. Arguing for this claim involves defending trope-resemblance theory from various attacks (in chapters three, four and five) and presenting the benefits of accepting the theory (in chapters three, four, five, and six).

As noted in the previous paragraph, there are many proposed solutions to the problem of universals that stand in competition with one another. These theories vary greatly in terms of their plausibility. While some of these theories will be examined in detail in chapter two, in order to minimize the length of this work, certain theories will be afforded only cursory treatment.

Two views that are not examined in chapter two are predicate nominalism, which is the view that what it is for two tokens to be of the same type is for the two tokens to fall under the same predicate, and concept nominalism, which is the view that what it is for two tokens to be of the same type is for them both to fall under the same concept. Though these views have been endorsed by or attributed to renowned philosophers, they are both extremely implausible.¹

¹See the appendix of this work for the arguments for these claims.
²See appendix.
³Quine seems to be a predicate nominalist of some kind and Hobbes is a self avowed predicate nominalist. Both Hume and Locke have been taken to be endorsing some form of concept nominalism, while Quine
Two other, more plausible, forms of nominalism are class nominalism and resemblance nominalism. Though both of these involve the rejection of the claim that properties are metaphysical entities, class nominalism differs from resemblance nominalism. The class nominalist analyzes what it is for two tokens to both be of the same type as the two tokens being a member of the same class. The resemblance nominalist analyzes what it is for two tokens to be of the same type in terms of the two tokens resembling a suitable paradigm object. While both of these views are not particularly plausible, the positive theory advanced in this work makes use of resemblance classes. Because of this it is important to determine whether or not there are unavoidable defects in using resemblance or classes in attempting to solve the problem of universals. Further, since a cost-benefit methodology is employed in this work, it must be determined if an economical solution to the problem of universals can be had without accepting properties as metaphysical entities. Because of these reasons, both class nominalism and resemblance nominalism will be examined in chapter two.

A third form of nominalism is a Lewis style possible worlds realism version of class nominalism. As will be noted below, accepting possible worlds realism enables a class nominalist to avoid certain objections that are particularly problematic to "standard" class nominalism. While possible worlds realism is a fruitful and serviceable philosophic hypothesis with many benefits, there are good reasons to reject it in favor of trope- and Hobbes (very explicitly) endorse forms of predicate nominalism. Some of these attributions are disputed and such disputes are rather difficult to resolve. Fortunately, the resolution of who actually held which view is beyond the scope of this work. The main problems that these two forms of nominalism suffer from are regresses. For example, the predicate nominalist analyzes what it is for two tokens to be of the same type as those two tokens falling under a single predicate. However, the question arises as to what it is for two tokens of falling under to both be tokens of that type. If the predicate nominalist applies his analysis to this case, his analysis will be circular. If another analysis is offered, he abandons his theory. Either way, predicate nominalism fares poorly. A similar sort of objection can be applied to concept nominalism. In this case, the problem arises with analyzing what it is for two tokens of falling under a concept. There are numerous other objections to these theories which seem to be quite telling against them. See D.M. Armstrong, *Universals & Scientific Realism*, Cambridge: Cambridge University Press, 1978, pp. 11-28.  


resemblance theory. One obvious advantage of trope-resemblance theory is that it avoids the burden of accepting possible worlds realism. While trope-resemblance theory involves an ontology that includes tropes, the possible worlds class nominalist requires a vast ontology of possible worlds as well as classes.

The argument from economy just presented can be responded to in the following manner. While it is true that trope-resemblance theory is more economical than possible worlds class nominalism, it also does far less work. It is the extra work that possible worlds class nominalism does, relative to trope-resemblance theory, that makes the price worth paying. Alternatively, the possible worlds class nominalist can point out that while he accepts an ontology of possible worlds, the trope theorist accepts tropes so that the two theories are roughly balanced in terms of the number of kinds they admit. In this situation, the possible worlds class nominalist would need to argue that accepting possible worlds class nominalism provides a pay off superior to that gained by accepting some form of trope theory. In order for the class nominalist to use such arguments, it must be argued that the class nominalist receives benefits from accepting possible worlds that are not available to the trope-resemblance theorist. There are two ways to argue for this position, each of which will be considered and replied to in turn. First, it can be argued that possible worlds realism is compatible with class nominalism but is incompatible with trope-resemblance theory. If this claim were established then the class nominalist would be able to present the following argument: there are good reasons to accept possible worlds realism. Class nominalism is compatible with possible worlds realism and trope-resemblance theory is not. Thus, the reasons to accept possible worlds realism are reasons to accept possible worlds class nominalism over trope-resemblance theory. The defect with this argument is that tropes are compatible with possible worlds

---

6For trope-resemblance theory to be incompatible with possible worlds realism it would have to be the case that both theories cannot be correct.
realism, as Lewis argues in *On the Plurality of Worlds.* The claim that there is a plurality of worlds and the claim that the basic, metaphysical entities of all these worlds are tropes certainly do not seem to be incompatible claims. Unless reasons are provided to believe otherwise, it a trope theorist can accept possible worlds realism just as the class nominalist can. Hence, the benefits of accepting possible worlds realism are open to both the trope theorist and the class nominalist. Since the trope-resemblance theorist can accept possible worlds realism as well as the class nominalist can, the only option left to the class nominalist is to show that class nominalism combined with possible worlds realism yields greater benefits at a lower cost than a trope-resemblance theory combined with possible worlds realism. In the context of the problem of universals, class nominalism combined with possible worlds realism is more ontologically economical than trope-resemblance theory combined with possible worlds realism. However, as will be argued in chapter two, class nominalism still suffers from serious objections that the acceptance of possible worlds realism does not enable the theory to avoid. In contrast, trope-resemblance theory readily solves these problems. Thus, even when combined with possible worlds realism, class nominalism, as will be argued in chapter two, is still inferior to trope-resemblance theory as a solution to the problem of universals. Since the trope-resemblance theorist can accept possible worlds realism and gain all its advantages, the possible worlds class nominalist enjoys no advantages that are denied to the trope theorist. Given these results, there are no good reasons to accept possible worlds class nominalism over trope-resemblance theory in the context of providing a solution to the problem of universals. The issue of whether a trope theorist should, in fact, accept or reject possible worlds realism goes far beyond the problem of universals and hence it will not be addressed in this work.

---

Though quite different in many respects, the forms of nominalism considered above all have in common the fact that they involve the rejection of properties as metaphysical entities. There are, however, views which accept properties as metaphysical entities and these views stand in competition with the trope-resemblance theory being put forth. The primary property accepting rivals of trope-resemblance theory are universals theories. The main dispute between the trope theorists and the universal theorists is over the nature of properties: trope theorists argue that properties are particulars and universal theorists contend that properties are universals. The universal theorists are also divided in their own ranks. Certain universal theorists, such as Russell, subscribe to the view that properties are transcendent universals, while other universal theorists, such as Armstrong, argue for the position that properties are immanent universals.

These three views, trope theory, transcendent universal theory, and immanent universal theory, form a sub-class within the general competition class. Since each theory denies the main thesis of the two other theories, they are clearly incompatible. Immanent universal theory, with its acceptance of non-spatial and non-temporal forms, is the least plausible of the three competitors, as will be argued in chapter two. However, consideration of this theory is essential in arguing for the claim that properties need to be located within space-time (or perhaps other dimensions) and hence it will be attended to in chapter two. Immanent universal theory, as put forth by David Armstrong, is the most developed and most plausible competitor to trope-resemblance theory. Because of this, Armstrong's theory will receive a great deal of attention in chapter two.

While trope theorists are all united in their acceptance of tropes, there are disputes among trope theorists over a variety of issues. The main disputes of trope theorists are over the nature of the tropes and the issue of whether to accept other entities, such as substrata. The best developed trope theory at this time, and hence the one to examine more closely, is that of Keith Campbell, as put forth in his book Abstract Particulars.
Fortunately, the theory being put forth in this work differs from Campbell's theory in several important respects. While the nature of these differences are given in great detail in chapter three, it is appropriate to provide a general sketch of the important differences. There are two primary distinctions between Campbell's theory and the theory presented in this work. First, Campbell argues for a field trope view. On this view, tropes are fields which extend across all of space-time and these fields admit of internal variegation in quantity. Campbell accepts four (perhaps five) of these space-time spanning tropes and offers an account of the objects of the world in terms of the interaction between various quantity regions of these four (or five) tropes. In contrast, the view put forth in chapter three of this work is that tropes have much more restricted spatial-temporal boundaries and they have no internal variegation. While no exact number of tropes is endorsed in this work, an account of objects is given in terms of the objects being "built up" from restricted tropes. Second, Campbell accepts space-time realism and employs space-time as a kind of substratum: the various regions of his field tropes are individuated by their spatial-temporal locations. These various regions are compresent with various regions of space-time and this compresence relation is important in Campbell's account of the individuation of trope regions. However, he takes space-time to itself be a trope. The view put forth in chapter three of this work is that space-time is real, but it is argued that space-time is not a trope. Further, due to the acceptance of restricted tropes, space-time is utilized in providing solutions to various sub-problems of the problem of sameness that are addressed quite differently on Campbell's field trope account. Thus, the main disputes between the two theories are over the nature of tropes and the nature and role of space-time in the solutions offered to the problem of difference. Before moving on to the rest of the chapter, a brief outline of the entire work will be given.

He argues that there are literally four (or five) tropes, each of a different type. So, his view is that there are four (or five) tropes and four (or five) types of tropes.
The general outline of the work is as follows. In the remaining sections of this chapter the problem of universals is examined in detail and the chapter concludes with arguments supporting the claim that the problem is both legitimate and important. Chapter two, as noted above, is dedicated to criticisms of theories that are in competition with trope-resemblance theory: class nominalism, resemblance nominalism, transcendent universalism, and immanent universalism. Chapter three's main focus is the problem of individuation. This chapter also contains a detailed discussion of tropes. In the context of this chapter the arguments against Campbell's theory in favor of the view put forth in this work are presented. The fourth chapter is concerned with defending the trope aspect of trope-resemblance theory from various attacks and the chapter concludes with arguments regarding the sorts of tropes that should be accepted. In chapter five the resemblance aspect of trope-resemblance theory is defended from a variety of objections and the trope-resemblance solution to the problem of sameness is presented and argued for in detail in the course of the chapter. The work itself concludes with a brief appendix detailing and arguing for the methodology employed in this work.

1.2 The Problem of Sameness

The problem of sameness is a grouping problem and the solution to the problem will determine the basis upon which entities are grouped into various types. The issue of grouping entities involves two primary problems. The first problem falls under the domain of metaphysics and it is the problem of determining what it is for two tokens to be of the same type. The second problem falls under the domain of epistemology and psychology and this is the problem of determining how and why human beings (and perhaps other beings) group entities into various types. It may well turn out that the two problems have the same solution, but they are, prima facie, distinct problems. To assume otherwise, or to assume that they must have two distinct solutions, would be question

\(^9\)For example, it may turn out that all there is for two tokens to be of the same type is for humans to believe that they are the same type or perhaps for humans to apply the same predicate to them.
begging. In the name of fairness, the two problems will be taken to be distinct, while the possibility will be kept open that they might turn out to have the same solution. Since this work is concerned with the metaphysical problem, the focus will be on solving it.

Typically, the problem of sameness is formulated in terms of properties and relations. Since it is appropriate for a philosophic problem to be presented in as neutral a form as is possible and practical, it is best to begin from a fairly neutral and plausible starting point. Therefore at this point 'properties' and 'relations' are to be taken in a neutral sense, without any attached particular metaphysical commitments. It is assumed that there are things\textsuperscript{10}, like tables, chairs, space shuttles, modems, and lions that are distinct from one another and that these things also belong to groups. It is often assumed that things belong to groups on the basis of their properties. For example, Aslan the Lion and Bill Clinton are distinct beings, but belong to many of the same groups. They both belong to the group of mammals, the group of males, and the group of terrestrial life forms and both belong to these groups because they are both mammals, both males, and both terrestrial life forms. It should be noted that 'properties' is still being taken in the fairly neutral sense in which accepting properties means nothing more then accepting claims such as that lions are mammals and not accepting a particular analysis of what it is, for example, to be a mammal. Given these two starting assumptions (there are individuals and these individuals belong to various groups on the basis of their properties), the goal is to determine what (if anything) it is for two tokens (distinct individuals) to be of the same type. The general question to be answered is: what is it for particulars \(a, b,\) etc. to all be of type \(F\)? For example, what is it for Aslan and Bill Clinton both be mammals?

\textsuperscript{10}What these things are is left as an open question. The view that there are tables, chairs, and people seems to be a fairly neutral and intuitively plausible starting point. From this starting point, there are many options which a philosopher can take. For example, a phenomenologist would account for tables and chairs in terms of phenomena, while a bundle of universals theorist would take tables and chairs to be bundles of universals.
The problem of sameness also encompasses relations. In addition to assuming the existence of individuals that belong to various groups on the basis of their properties, it is also assumed that these individuals and groups stand in relations with one another. This claim is metaphysically neutral and only involves a commitment to accepting claims like "Sasha is a mile from Mohammed" or "Bill is taller than Ubu." As with properties there is no commitment to a particular metaphysical analysis of 'relations' in this assumption. The problem of sameness is the problem of determining the basis upon which relations are grouped. The general question can be expressed as follows, in the case of two place, symmetrical relations: Letting R be the relation and a, b, c, d be individuals, and suppose that a stands in R with b and c stands in R with d, the question to be answered is: what is it for Rab and Red to both be instances of R? For example, Bill is a mile from Jill and Joe is a mile from Sandra. What is it for them both to be grouped as instances of the relation being a mile from? Naturally, this question would need to be modified or replaced in cases involving relations with more than two places, relations that are asymmetrical, and in cases in which other complexities are involved.

A sub-problem of the problem of sameness is determining what it is for a particular to have a property. The general question to be answered is: what is it for a to be F? For example, what is it for a cat to be a mammal? The earlier question, "what is it for a, b, c, etc. to be of type F?", is aimed at determining the basis for the grouping of tokens into types. The claim that the two questions should be initially taken as distinct is supported by the trope-resemblance theory. On this view, a particular has a property in virtue of its relation with a particular trope and entities are grouped on the basis of the resemblance that holds between them. For example, a red ball would be red because of its relation with a red trope(or tropes) and it would be grouped with other red objects because of the resemblance that holds between the red trope (or tropes) of the ball and the red tropes of other objects. Since assuming that the two questions must have the same answer would
beg the question against the trope-resemblance theory, it is best to take the questions as distinct and leave open the possibility that they might have the same answer. For example, class nominalism is a view in which the two questions have the same answer. A particular is R because it is a member of the class of R things and a, b, and c are R because they belong to the class of R things. This property sub-problem also has a relation sub-problem counterpart, namely the problem of determining what it is for an entity to stand in a relation.

A final sub-problem of the problem of sameness is the problem of determinables. Whereas a determinate property is a property such as *having a mass of twelve kilograms*, a determinable property is a property such as *having a mass*. The relation between determinables and determinates is analogous to the relation between token and types which was discussed earlier, such that a determinate is a token of a determinable type. For example, a mass of fifty five kilograms is a mass. The sort of general question that a solution to the problem of determinables will answer is as follows. Letting M1, M2, and M3 be determinates and M a determinable, the question is: what is it for M1, M2, and M3 to all be M? For example, what is it for red, blue, and green to all be colors?

While nearly everyone accepts that there are properties and relations in the neutral senses of "properties" and "relations" and it is reasonable to do so in the light of everyday experience, there is a great deal of philosophic dispute over what properties and relations are (if anything). The dispute that the problem of sameness has generated has created two hostile camps: those who accept properties or relations as metaphysical entities (the property-acceptors, for short) and those who deny such entities (property-deniers, for short). The property acceptors include in their ranks such historical figures as Plato, various Medieval philosophers, and Descartes and such modern philosophers as

---

11 Philosophers can accept properties or relations or both.
12 It is reputed that the dispute over universals between Medieval thinkers was so intense that arguments sometimes degenerated into brawls.

The property-deniers typically accept the view that all existing things are particulars, in addition to their rejection of properties as metaphysical entities. This position is commonly, though misleadingly, referred to as nominalism. However, as will be demonstrated later, it is possible to accept that all existing things are particulars while accepting the existence of properties as metaphysical entities. This particular position is held by C.B. Martin, and Keith Campbell. It is because of this fact that the term "property-denier" will be used in place of "nominalist" to refer to one who rejects the existence of properties as metaphysical entities. There are many property-denying theories, including class nominalism and resemblance nominalism. Later in this work, both of these views will be examined in detail.

Those who accept properties split into two main groups: Those who accept that properties are universals and those who accept properties, but take them to be particulars. Plato, Russell, and Armstrong are among best known advocates of properties as universals and C.B. Martin, Stout, D.C. Williams, and Keith Campbell are among the best known of modern advocates of properties as particulars. Properties taken as particulars have been referred to by many names, but the current trend will be followed and they will be called 'tropes.' Those who accept properties (either as universals or

---

13 This usage is rather misleading as Armstrong points out in Universals, since 'nomen' is Latin for 'name' and hence the use of the word 'nominalism' suggests a view in which entities are grouped on the basis of some naming procedure or some other linguistic device. However, only predicate nominalism proposes to solve the problem of sameness with such a linguistic device. Historically, 'nominalism' has an interesting origin. Peter Abelard held the view that a universal is not a sound (vox) but a word (sermo). Words, on his view, acquired their meaning from their referential use and this reference is mediated by a general idea. This general idea is taken to be a composite image. Thus, it would be plausible to classify him as a conceptual nominalist. A second Medieval philosopher, William of Ockham, took universals to be terms or signs standing for individual objects and sets of objects. These "universals", William argued, cannot exist, since what exists must be an individual and universals obviously cannot be individuals.

particulars) are also divided into those who reject determinables and those who accept them. Most property acceptors do not accept determinables. Plato's forms seem to be special cases of determinables, as will be seen later, and David Armstrong rejects determinables in one work and accepts them in another. It is reasonable to follow Armstrong's rejection of determinables and reasons supporting this rejection will be presented in chapter four.

1.3 The Problem of Difference

While the problem of sameness involves the problem of determining the basis upon which tokens are grouped into types, the problem of difference, taken in the most general sense, involves the problem of dividing, within a type, entities from one another. The general question is: what, if anything, is the basis for two tokens of the same type being distinct tokens? For example, suppose that Leo and Bill Clinton are both mammals. They both belong to the type of mammals, but they are distinct individuals. The question is, what is the basis for the distinction between Leo and Bill Clinton such that they are two, separate individuals?

The central issue is the basis upon which entities are differentiated from other entities of the same type and a solution to the problem of difference will provide the basis upon which entities are differentiated from one another. However, it must be noted that there may well not be one basis of differentiation that holds for all entities. For example, Armstrong individuates states of affairs by their spatial-temporal locations. Two states of affairs are different states of affairs iff they have different spatial-temporal total positions and they are the same otherwise. At the same time, Armstrong individuates properties by their causal powers. Two properties are different properties iff they have different causal powers and they are the same property otherwise.

---


16 Entities of the same type are individuated from entities of different types because they are different types.
The problem of difference is an extremely broad problem and encompasses a rather wide domain. It includes within its scope such issues as the identity conditions of classes, the identity condition of properties, personal identity, the individuation of objects and substances, and a variety of other issues. Given the broadness of the problem, the issues of differentiation will be addressed within the appropriate contexts. For example, the identity conditions of classes (the basis upon which one class is differentiated from another) will be discussed in chapter two, the individuation of substances will be discussed in chapter three, while the identity conditions for properties will be discussed in chapter 4.

1.4 Particulars and Universals

An integral component of the problem of universals is the dispute over the nature of the entities which constitute the world. One major part of this dispute is the issue of universals and particulars. As was noted earlier, some philosophers hold the view that all existing things are particulars and that there are no universals (such as Keith Campbell, Descartes, Leibniz, and myself) while others hold that there are both universals and particulars in the sense that particulars are entities apart from universals (such as Plato and D.M. Armstrong). Other philosophers hold the view that particulars are simply bundles of universals and are not, as such, distinct entities from universals. Those who accept only particulars or universals as basic entities have a one category ontology, while those who accept particulars and universals as basic entities have a two category ontology. The main dispute regarding particulars and universals is whether particulars or universals or particulars and universals are the basic ontological entities of the world.

While particulars and universals and the distinction between the two are known to most philosophers, it is important for precise definitions to be provided so as to avoid confusion. A particular is, very simply, an entity that is not a universal. The most common statement of the distinction between universals and particulars is given in terms
of space and time. A precise definition, that serves to capture what a particular intuitively is, is as follows: a particular is an entity that can be wholly present at only one spatial location at a time, while a universal is an entity that can be wholly present at many distinct spatial locations at the same time (or instantiated in many places at the same time, in the case of transcendent universals). Obviously, this distinction will only hold for spatial entities. Since non-spatial entities should not be rejected out of hand, particularity and universality need to be defined in such a way so as not to beg the question against those who postulate non-spatial entities. In light of this requirement, particularity can be described as follows: a particular is an entity that can, at most, be wholly present, at a single time, at one place on each dimension at a time. A particular need not occupy a place on every (non-temporal) dimension, but a particular can only occupy one such place on each dimension at a time. A universal would be an entity that can be wholly present, at a single time, at more than one place on each dimension at a time (or can be instantiated in many places on the same dimension at the same time). Keith Campbell asserts that "place on a dimension can be regarded as a rather formal concept involving order and structure, with space providing only our most comfortable and familiar example." These definitions of particularity and universality have the advantage of avoiding any commitment to the existence or non-existence of non-spatial entities and their neutrality makes them a good, non question begging starting point.

Those who accept particulars or universals (or both) must be able to provide accounts of particularity or universality (or both). There are two basic approaches to working out such accounts. The first is to take particularity or universality (or both) as primitives and forgo further analysis. Doing so increases the cost of the theory and this cost will vary from theory to theory. As will be argued later, taking particularity as a

---

17Non spatial entities include such things as Cartesian minds, numbers, God, and so forth.
primitive is far cheaper than taking universality as a primitive. The second option is to undertake an analysis of particularity or universality (or both). Taking this option can be cheaper than taking particularity or universality as a primitive, provided the analysis doesn't generate more trouble than it is worth. For example, Armstrong analyzes particularity in terms of spatial-temporal positions and he provides an account of the capacity of universals to be multiply located. The issue of particularity and universality will receive special attention later in this work.

One issue that may be in need of clarification is the distinction between individuation and particularity. An entity, considered as an individual, is an entity considered as a single entity, differentiated from others of its type, where the emphasis is placed on it being a single one of the type of entity. The general problem of individuation of Fs is the problem of determining what, if anything, serves to differentiate two Fs. Solving this problem, as will be made clear below, involves solving the problems of differentiation and the boundary problem. The corresponding question is, where A and B are F, what is it for A and B to be two, distinct F? To answer this question fully requires an account of what it is for A to be F and what it is for A to not be B and an account of what it is to be one F. An entity considered as a particular is considered in terms of its relationship with dimensions, specifically in terms of the places on various dimensions that it can occupy. To be more precise, for an entity, E, to be a particular is for it to be possible for E to only exist, at most, at one place on each dimension at a single time. The question that is to be answered here is: what is it for entity E to be such that it can only exist, at most, at one place on each dimension at a single time?

The distinction between being a particular and being an individual is especially clear in the case of universals. If there are, as most universal theorists suppose, many different

---

19If there is but one F entity, then relevant questions would be what it is to be F and what it is to be one F. Since the F would be the only F, the issue of what differentiates it from other Fs would not be of pressing concern. Of course, if there could be other Fs, then an answer would be required to the question of what it is for one F to be different from another.
universals, then these universals must be individuated from one another. For example, suppose that one type of universal is being a color. However, there would not be just a color universal, but many different color universals: blue, green, red, and so forth. Determining the basis of individuation for universals would involve determining what it is, for example, for the universal green to be different from other colors such as blue and red.

While universals are individuals, it is obviously the case that they are not particulars. This is because universals, by definition, can be multiply located or multiply instantiated and are not restricted to occupying no more than one place on each dimension at a time. If it is possible for there to be universals, then particularity and individuality cannot be taken to be one in the same thing since there could be individuals that are not particulars. Of course, in order to avoid begging the question against the universal theorists, it is proper to begin with the assumption that particularity is not the same thing as individuality. It is reasonable to accept, at least initially, that particularity is not the same as individuality.

Unlike universals, tropes are both particulars and individuals. If there are, as will be argued later, many different tropes (and many different types of tropes), then these tropes must all be individuated from one another. Suppose, for example, that there are color tropes. Since there are many different types of colors, there would be many different types of color tropes: blue, green, orange and so forth. Now, consider a certain green trope. This trope is distinct from the various other color tropes, such as the red, blue, and orange tropes. Of course, the green trope in question is also quite distinct from other green tropes (even those it exactly resembles). In this case, determining the basis of individuation of tropes would involve determining what it is for the green trope in question to be distinct from the other color tropes as well as the other green tropes.
Since tropes are properties that are particulars, they cannot be multiply located. They are restricted to being able to occupy, at most, only one place on each dimension at a time. In the case of tropes, determining the basis of particularity would involve determining what, if anything, made individual tropes such that each trope could, at most, occupy only one place on each dimension at a time.

Even though tropes are particulars and individuals, the individuality of a trope (that which distinguishes it from other tropes) is quite distinct from its particularity (that which constrains it to occupying, at most, only one place on each dimension at a time). It is, however, contended that all particulars there are individuals (which is hardly a controversial claim) and that all individuals are particulars (which is a very controversial claim). However, the second position is one that cannot simply be assumed but must be argued for and a great part of this work is committed to this task.

1.5 The Legitimacy and Importance of the Problem of Universals

There are philosophers who consider the problem of universals, and perhaps metaphysics in general, to be illegitimate and there are those, such as myself, who consider the problem to be legitimate. The legitimacy of a philosophic problem can be taken to be constituted by its acceptance by the relevant community as a problem worthy of consideration and attention. In the case of philosophic problems, the relevant community would consist of members of the philosophic community. A philosophic problem would be legitimate if it were accepted as a problem worthy of consideration and attention. Under this definition, the problem of universals is clearly legitimate as it is given attention and consideration in that classes are taught on the topic, respected philosophers work on it, and articles and books are published on the topic.

This account of legitimacy has the following two advantages. First, the legitimacy or illegitimacy of any problem can easily be determined by empirical methods. Second, it captures much of the actual practice of philosophers in terms of how they often, in
everyday practice, divide problems into the categories of legitimate and illegitimate. However, while these aspects of legitimacy are inescapable, accepting that problem P is a legitimate problem because it is accepted by the relevant community as a problem worthy of consideration would be problematic. First, this sort of reasoning seems to be a version of a fallacious ad populum or a fallacious appeal to belief. Second, if the only standard for legitimacy is that the majority of the community accepts it, for whatever reason, than the categorization of problems as legitimate and illegitimate would be arbitrary. It would hardly do, in professional philosophy, to accept certain topics as being worthy of consideration and dismiss other topics as being unworthy of consideration in an arbitrary and unprincipled manner. If the assessment of a problem's legitimacy is done in a principled manner, the legitimacy is not constituted by community acceptance, but by passing or failing to pass these standards. Thus, unless assessments of legitimacy are entirely arbitrary, there has to be more to legitimacy than acceptance by a community. If assessments of legitimacy are ultimately arbitrary in character, then accusing a problem of being illegitimate has no more force than asserting that one doesn't like it. In this case, it would be unreasonable to accept and reject problems on the basis of their legitimacy and illegitimacy. Thus, if there is to be any force behind a charge of illegitimacy leveled against a problem, then principled standards of legitimacy are required.

The quest for an objective method of determining the legitimacy or illegitimacy of philosophic problems has long been an important part of philosophy. This quest is generally motivated by the disgust philosophers so often feel towards their own endless bickering over apparently insoluble problems. Once criteria of legitimacy are established, they can be used to divide philosophic problems into the legitimate problems and the illegitimate problems and those that are found to be illegitimate can be safely laid to rest.

20Since what counts as legitimate seems to be as much a matter of ideology as philosophy.
In recent decades, criteria of legitimacy have been employed to justify the classification of metaphysical problems as illegitimate. While attacks on metaphysics are nothing new, the grounds for rejection given by twentieth century philosophers such as Ayer and Wittgenstein, are quite different from those employed in the past. Historically, those who have urged the abandonment of speculative metaphysics have done so because they believed that:

metaphysics must be abandoned because we had no means of deciding what answer to its perfectly significant questions was correct or because it set about answering them in a mistaken, unscientific manner; metaphysics was practically impossible or worthless because we could not test the truth or falsity of its statements, but its statements were at least intelligible.\(^\text{21}\)

The positivists and others developed an entirely new ground to reject speculative metaphysics. They agreed with their predecessors that metaphysics should be abandoned, but they disagreed about the intelligibility of metaphysical statements. On their view, there is a sharp distinction between idle speculation and nonsense masquerading as speculation. Idle speculation was speculation upon a thesis which could not be tested, but which could be true or false. For example, speculating about what Christopher Columbus ate on May 11, 1490 would be idle speculation. If one is engaged in pseudo-speculation, then one is "not merely unable to determine the truth or falsity of a thesis, for there is no genuine thesis to be true or false."\(^\text{22}\) Philosophers such as A.J. Ayer and Wittgenstein were among those who rejected metaphysical speculation on this ground. If these philosophers are correct, then metaphysics in general and the metaphysical problem of universals in particular are illegitimate.

Those who launch such attacks on the legitimacy of metaphysical problems must claim that their attacks involve no metaphysical presuppositions, otherwise they would be destroying the basis upon which their attacks are grounded. Unfortunately for those who

---


would assail metaphysics, the issues of philosophic legitimacy and philosophic methodology are themselves metaphysical and epistemic issues. The problem that those who would reject metaphysics must face is well put by Rorty:

To know what method to adopt, one must already have arrived at some metaphysical and some epistemological conclusions. If one attempts to defend these conclusions by the use of one's chosen method, one is open to a charge of circularity. If one does not so defend them, maintaining that given these conclusions, the need to adopt the chosen method follows, one is open to the charge that the chosen method is inadequate, for it cannot be used to establish the crucial metaphysical and epistemological theses which are in dispute. Since philosophical method is in itself a philosophic topic...every philosophic revolution is open to the charge of circularity or the charge of having begged the question.23

From Rorty's argument it may be gathered that philosophy, as a whole, is a pseudo discipline for it seems impossible to come up with adequate, non-circular methods and standards of legitimacy. This conclusion can be drawn (and some have drawn it and have hence rejected philosophy altogether), but this difficulty can also be interpreted differently.

It can be concluded that problems of legitimacy and methodology are themselves substantive philosophical problems and are themselves open to dispute. Hence, there is no privileged position that can be honestly taken to be the one true method of philosophy or the one true standard of legitimacy. Therefore attacking the legitimacy of a particular problem simply pushes the conflict up one level to that of methodology and legitimacy and disputes over methodology and legitimacy push the conflict up yet another level. The process can continue until either agreement is reached at some level (and then the disputants can work their way downward again), the dispute is called off, or it is reduced to a clash of intuitions.

What should be accepted is that legitimacy is a relative notion. A particular philosophic problem is legitimate relative to a certain theory of legitimacy. As has been

noted, these theories of legitimacy are themselves open to dispute. Fortunately, disputes over legitimacy can be resolved by reaching agreed upon pre-suppositions and criteria among the participants in the dispute and then working from these points of agreement to settle such disputes (or at least conduct them in a reasonable manner). Perhaps the best that can be hoped for is a reasonable set of criteria which can be used to assess the legitimacy of various philosophic problems. As has been repeatedly noted, such criteria are themselves open to debate and such debates are an important part of philosophy.\(^{24}\) This means that philosophy is a discipline that involves disputes at all levels. In this, it is no different from other academic disciplines, such as physics and biology. This is not a problem particular to philosophy, but to any theoretical inquiry.

What is needed is a set of reasonable criteria upon which there can be a large measure of agreement and which can aid in the settling of disputes over legitimacy. The discussion will begin with two important attempts to provide criteria of legitimacy. The first criterion under consideration is A.J. Ayer's verification principle.\(^{25}\) The failure of this principle (due to the fact that it is meaningless since it cannot be verified) is well documented,\(^{26}\) and the details will not be presented here. Despite the failure of the principle as Ayer presents it, the underlying sentiment can be presented in a more moderate and reasonable form, as Rorty does: "What Ayer is saying may be best put as a challenge to the metaphysician: 'tell us what counts for or against what you are saying, and we shall listen; otherwise, we have a right to ignore you.'"\(^{27}\) This question suggests a criterion to use in the testing of philosophic problems. A philosophic problem is

\(^{24}\)For example, a significant part of feminist philosophy involves the attempt to provide new standards of legitimacy. Some feminists even go so far as to claim that there are distinct male and female methodologies on philosophy and that the legitimacy of one's method depends on one's sex.
illegitimate if there is, in principle, no basis upon which to determine what would or would not count as an adequate solution to the problem. If there is, in principle, no basis upon which to determine what would or would not count as an adequate solution to a particular problem, there could be, in principle, no resolution of the problem, speculation upon it would be idle and such a pursuit would hence not be worthy of serious philosophic attention. This criterion can also be applied to proposed solutions to philosophic problems, such that a solution is an illegitimate proposal if there is, in principle, no basis upon which to decide what would count for or against that solution.

The problem of universals, as it has been formulated in this work, is not illegitimate in regards to this criterion, since a clear discussion of adjudicating between competing proposals is provided in the appendix of this work. There is a basis upon which to determine what would, or would not, constitute an adequate solution to the problem of universals. In the discussion to follow of the proposed solution to the problem of universals put forth in this work, clear statements are provided as to what would count for or against the theory and when criticizing the views of others, and it is done in terms of what counts in their favor and what counts against them. As is evident from chapter two, and other chapters of the work, due attention is given to empirical and scientific arguments for and against various proposed solutions to the problem of universals. Hence, the proposed methodology does not involve empty or idle speculation that precludes any resolution of the problem of universals. The problem of universals, as formulated in this chapter formulate and approach it, is not illegitimate by this standard and this provides a degree of motivation to accept that it is legitimate.

---

28 Of course, what counts as an adequate solution is itself a matter of philosophic dispute and the appendix of this work is dedicated to methods of assessing competing theories.

29 As an historical example, Pascal can be taken to be arguing that since there was no way to settle disputes over the existence of God, the problem of God's existence is not a legitimate matter for philosophic speculation. See Blaise Pascal, *Thoughts*, trans. W.F. Trotter, New York: P.F. Collier & Son, 1970.
A second major criterion of legitimacy is offered by both the Ideal Language philosophers and Ordinary Language philosophers (whose main dispute seemed to be over which language was ideal). Rorty, after carefully considering the views of the two language camps, had this to say:

"Do linguistic philosophers have agreed upon principles in accordance with which they can infer from facts about current linguistic practice to the dissolution of a given philosophic problem?" The answer to this question must be negative, if one means by "the dissolution of a philosophical problem" a demonstration that there is tout court "no problem" about, for example, perception, free will, or the external world...The answer is affirmative if one means instead that a particular formulation of a given problem involves a use of a linguistic expression which is sufficiently unusual to justify our asking the philosopher who offers the formulation to restate his problem in other terms. 30

Rorty's conclusion suggests two more potential criteria that can be used in assessing the legitimacy of philosophic problems: if a problem that is stated in such a way that it involves a sufficiently unusual linguistic expression and it cannot be reformulated in other terms that are not unusual, then the problem is illegitimate. If the reformulation of a problem (that is stated in such a way as to involve a sufficiently unusual linguistic expression) is such that the "original problem-generating premises, when reinterpreted, seem dubious or false", then the problem is illegitimate. In such cases, what was originally taken to be a problem will turn out to be the result of confusion, poor formulation, or a misuse of language31. At the very least, most statements of philosophic problems can benefit from reformulation in clearer terms.

The problem of universals, as formulated in this chapter, certainly does seem to avoid any sufficiently unusual linguistic expressions. For example, the question "what is it for two tokens to be of the same type?" involves no unusual linguistic expressions and


31An example of nonsense is "The nothing clearly is not, for it is nothing, yet being nothing it must be something, so it must be that the nothing both is and is not" and the problem of determining, on the basis of this claim, how it is that the nothing both is and is not is more a problem of grammar than metaphysics. Of course, with suitable charity and reformulation, almost any statement of a problem can be reworked into a legitimate problem, but often at a price of abandoning the original problem.
the question can be quite easily expressed as a sensible question in everyday English: "What is it for two things to be the same sort of thing?" Since the question is sensible and involves conventional usage of everyday terms, the burden of proof rests upon those who would claim that the question involves an unusual linguistic expression. Since the problem of universals (or rather its two sub-problems) can be clearly stated in usual expressions in ordinary English and in more technical terms, it seems reasonable to accept that the problem of universals is not illegitimate in regards to this criterion.

For a philosophic problem to be legitimate, its statement must be intelligible and the problem must have no obvious, intuitive answer. If a problem cannot be stated in an intelligible manner then it clearly cannot be worked on and hence cannot be a legitimate problem worthy of philosophic pursuit. If the "problem" is such that it has an obvious and intuitive answer, it can hardly be a serious problem, worthy of ongoing philosophic consideration.

The questions "what is it for two tokens to be of the same type?" and "what is it for a token to be differentiated from others of its type?" certainly appear to be clear, intelligible questions. The problem of universals does not face any difficulties here. It has been claimed that the problem of universals does have a an obvious and intuitive answer and it is this claim that will be considered next.

It is claimed by some philosophers, such as Bambrough, that Wittgenstein solved the problem of universals with his notion of family resemblance. The nature of this solution is best expressed by the following: "The nominalist says that games have nothing in common except that they are called games. The realist says that games must have something in common other than that they are games. Wittgenstein says that games have nothing in common except that they are games."32 It is claimed that Wittgenstein's solution is both obvious and intuitive and that the problem of universals was generated by

"our craving for generality" 33 and the hostility between the nominalists and the realists. Wittgenstein is often credited with dissolving the problem of universals, with providing a psychological account for the persistence of the problem, and offering the proper therapy to cure the nominalists and realists alike of their affliction.

If Bambrough is right and Wittgenstein solved the problem of universals, then there would hardly be any need to continue. However, it will be argued that while Wittgenstein has contributed greatly to the problem of universals, the problem has not been solved.

The argument that Wittgenstein's family resemblance solved the problem of universals can be presented in the following manner. The two traditional approaches to the problem of universals, namely that of the philosophers who accept universals and that of the philosophers who are traditional nominalists, are partially right and partially wrong. What Wittgenstein does is take what is correct about each view and form a third position that, by avoiding the defects of both, succeeds in solving the problem of universals. The universal theorists are quite right, it is claimed, in their view that "there is no classification of any set of objects which is not objectively based on genuine similarities and differences." 34. However, they are wrong in claiming that there is no objective justification for such classification unless there is an element that is common to all members. The nominalist is quite right, it is claimed, in her denial of the universal theorist's claim that there is no objective justification for such classification unless there is an element that is common to all members. However, the nominalist in denying that "there is no classification of any set of objects which is not objectively based on genuine similarities and difference." 35

34Renford Bambrough, "Universals and Family Resemblance", p. 123.
35Renford Bambrough, "Universals and Family Resemblance", p. 123.
Against the universal theorist, Wittgenstein offers his famous discussion about games. He makes the case that when games are carefully examined it is found that there is one element that is common to all games. It is concluded that the universal theorist is in error. Against the nominalist, several traditional attacks can be launched such as the problem of arbitrary classifications which, according to Bambrough, shows the need to accept that resemblance is objective. This sort of attack is on predicate nominalism and the idea behind it is that unless predicates are to be applied in an arbitrary and hence unlearnable manner, then the predicate nominalist must recognize objective similarities. The details of the argument are not of great concern here, since the purpose of this section is to present the family resemblance proposal and not to assess the arguments for it. A second problem that any nominalist runs into is the fact that resemblance is "unintelligible except as resemblance in a respect, and to specify the respect in which objects resemble one another is to indicate a quality or property." The general idea behind this objection is that the nominalist does not have the resources to account for resemblances which hold in certain respects. Since arguments of this sort are developed fully in chapter two in the criticisms presented against class nominalism and resemblance nominalism, the argument will not be discussed further here.

Because of the argument just considered, it is concluded by Bambrough that the solution to the problem of universals must be such that it involves objective resemblance, but does not base this resemblance on there being one element or elements common to the resembling objects. Wittgenstein's solution is that objects are formed into various families on the basis of purely objective similarities and dissimilarities. However, no two members of a family have one element in common. All that members of family F have in

---

36 This problem is examined in chapter two as the problem of spurious classes/properties. For the full details of the argument, see Renford Bambrough, "Universals and Family Resemblances" in M. Loux, ed. Universals and Particulars, Indiana: University of Notre Dame Press, 1976, pp. 119-123.

common is that they are all Fs. For example, all that games have in common are that they are games. As was noted above, it is claimed that Wittgenstein solved the problem of universals in an intuitive and obvious manner and that it was the craving of generality on the part of philosophers and a failure to see the obvious that kept the problem from being solved.

Rather than the notion of family resemblance dissolving the problem of universals it seems to be the case that a family resemblance position is yet another entry in the competition to solve the problem. In light of the general discussion of legitimacy given above, it does not seem that the problem of universals is such that it can be dissolved in general or by family resemblance in particular. In all fairness, it must be noted that Bambrough (and others) are content to claim that while the problem of universals was not dissolved by the notion of family resemblance, it does solve the problem. Hence, what is under consideration is whether or not the notion of family resemblance provides an adequate solution to the problem of universals.

There are various problems with Bambrough's arguments, but these are not central to the issue at hand. What is central is whether or not the notion of family resemblance solves the problem of universals in such a way that nothing more really need be said about the problem. It is contended that family resemblance alone is not an adequate solution to the problem of universals for the following reasons. First, the notion of family resemblance can, at most, provide a solution to part of the problem of sameness. Earlier in this chapter it was argued for the division of the problem of universals into two main sub problems and the division of these two sub-problems into further problems. In the case of the problem of sameness the two main problems are determining what it is for two tokens to be of the same type and determining what it is for a particular to have a property. It is clear that while the notion of family resemblance addresses the first problem, it completely fails to address the second. After all, even if it is true that all that
red objects have in common is that they are red, the question still remains as to what it is
to a single red object to be red. As will be argued below in chapter two and chapter five,
a resemblance solution to this second problem simply cannot be successful. The notion of
family resemblance cannot be taken to solve the second problem and hence it cannot be
taken as an adequate and complete solution to the problem of universals.

As was noted above, solving the problem of difference involves determining the
basis upon which entities are differentiated from other entities of the same type.
Obviously, the notion of family resemblance will not do here. The notion of family
resemblance does not provide an adequate solution to the problem of difference.

In the light of these results, it seems that the notion of family resemblance does not
solve the problem of universals. This is because, even if it is assumed that family
resemblance does solve part of the problem of sameness, the other problems still remain.
The problem is still a viable one that has not been shown to have an obvious and intuitive
answer, so it can legitimately be worked on further. Of course, it must be noted that the
notion of family resemblance is a very useful one and is, in fact, one that will be utilized
in chapters five the proposed solution to the problem of universals. While it may turn out
that the problem does, in fact, have an intuitive answer, no such answers are currently
available so the work goes on.

Thus, a reasonable set of criteria has been presented with which to assess the
legitimacy of philosophic problems. If a philosophic problem is such that 1) it has a clear
set of criteria as to what counts for and against proposed solutions, 2) it can be, if stated
using unusual linguistic expressions, adequately reformulated and 3) is intelligible and
has no obvious, intuitive solution, then it is reasonable to accept the problem as
legitimate. However, the real test lies in the work ahead and the final assessment of
legitimacy should not be made until the full case has been presented.
There are those who are willing to accept that the problem of universals is legitimate, but take it to be of little importance. There is a need to provide reasons to accept that the problem is important. If the goal of philosophy is to increase human wisdom, the problem of universals is important to the degree that working on it contributes to achieving this goal. If the goal of philosophy is something else, then the problem is important to the degree that working on it contributes to achieving that goal.

The arguments that follow may be best characterized as "pay off" arguments. The gist of this sort of argument is as follows. In everyday life, work is typically considered important enough to do if the payment for the work (either in monetary terms or more intangible gains) is worth the effort and cost. The same sort of notion is operative in philosophy, so that a problem is important if the yield from success is expected to be worth the effort and cost.

This sort of pay off argument is essentially a variation of the pay off argument David Lewis uses to argue for possible worlds realism. In On the Plurality of Worlds,38 David Lewis argues that philosophers should accept possible world realism because the hypothesis is serviceable and fruitful. In short, accepting possible worlds (taken as metaphysical entities) yields numerous theoretical benefits and hence they are worth the ontological price. Modified a bit, this argument can be presented to apply to philosophic problems. A philosophic problem is important and worth accepting when a solution to it can be reasonably expected to be serviceable and fruitful. In short, a problem whose solution can be expected to yield theoretical benefits is worth accepting as important. Lewis does, and anyone who accepts this should, freely admit that this sort of position may be misguided, but it seems to be the best one currently available.

The main argument for the importance of the problem of universals is its pay off in terms of the contributions a solution to the problem would make to philosophy as well as

to other disciplines. The problem of sameness is important in its own right, as will be
argued in this work\(^{39}\), and it is also important in terms of the contributions a solution to
the problem would make in other areas of philosophy. For example, a solution to the
problem of sameness will provide results that are useful in the philosophy of language.

One problem in the philosophy of language is to explicate how it is possible to use the
same word in describing many cases. To be more specific, the solution to the problem of
sameness will be useful in developing a semantics for general kind terms. Determining
the basis upon which tokens are grouped into types is almost certain to shed light on the
problem. It should be noted that the importance that the problem of sameness derives
from the theoretical benefits it yields in these other areas is contingent upon the
legitimacy and importance of these other areas. For example, if the problem of working
out a semantics for general kind terms is illegitimate or trivial, then the fact that a
solution to the problem of universals would yield benefits in that area would hardly
contribute to the importance of the problem of sameness.

While it would be unreasonable to expect a defense of the legitimacy and
importance of each area in which a solution to the problem of sameness might yield
theoretical benefits, following defense will be offered of the two areas mentioned. The
first defense is an argument from authority. Those who do professional work in
semantics (which involves working on the semantics of general kind terms) and science
(which involves extensive classifications and groupings) certainly believe their work is
legitimate and important. Since they are the experts in such areas, perhaps one should
yield to them in this matter.\(^{40}\) Second, in the case of science, grouping of entities seems

---

\(^{39}\) The theoretical benefits of my theory (in the context of the problem of sameness) will be examined, in
chapters four, five and six.

\(^{40}\) Then again, perhaps not. It is not clear that metaphysicians should be forced to argue for the legitimacy
of their work while scientists simply assume their work is legitimate. It seems fair that if any academic
discipline is required to justify its activities, then all of them should. Hence, it does not seem that there is a
privileged academic discipline whose legitimacy can simply be assumed. Of course, defending the
legitimacy of all the disciplines mentioned above would go far beyond the scope of this work.
to be an integral part of doing science. For example, taxonomy and classification of organisms is a vital part of biology and the classification of diseases, etc. is a vital part of the medical sciences. There don't seem to be any good reasons to regard such work as trivial and unimportant. Further, it would seem that the burden of proof lies on those who would claim that scientific classification is illegitimate and trivial.

The problem of difference is also important in its own right and in terms of the contributions a solution to the problem of difference will have in other fields of philosophy and in other disciplines. For example, the problem of differentiating actions is an important problem to those who are concerned with certain forms of consequentialism, since the consequences of an action cannot be determined unless the action can be individuated from other actions. The solution would also have positive ramifications in the realm of personal identity and other fields in which a basis of differentiation would prove useful, such as various sciences.

As was the case with the problem of sameness, the problem of difference would only gain importance from its theoretical contributions to other areas if those areas are themselves legitimate and important. Since the problem of personal identity is a philosophic problem, it may be freely tested as to its legitimacy by the methods given above. While the details will not be presented here, the problem of personal identity certainly seems to pass the legitimacy test that has been put forth. Further, personal identity certainly seems important. For example, personal identity is tied to various important questions, such as the question of whether or not a person can continue to exist after bodily death. Since all people die, this question seems rather important and it would be worth some effort to find an answer. Further, the issue of personal identity has various legal and moral implications which contribute to its importance. Once again, the differentiation of entities is an important part of science and the legitimacy and

---

41 The theoretical benefits of my theory (in the context of the problem of difference) will be examined in chapters three and six.
importance of science has been considered above. The next chapter consists of a critical examination\textsuperscript{42} of proposed solutions to the problem of universals, beginning with class nominalism.

\textsuperscript{42}For a complete discussion of the methodology employed, see the appendix on methodology.
CHAPTER II
PROPOSED SOLUTIONS TO THE PROBLEM OF UNIVERSALS

2.1 Introduction

In the previous chapter the problem of universals and its various sub-problems were discussed and a defense of the legitimacy and importance of the problem of universals was presented.

The proposed solution to the metaphysical problem of universals being put forth in this work is a trope-resemblance theory. In this theory, properties are accepted as ontological entities but they are taken to be particulars and not universals. Entities are grouped into various classes on the basis of the resemblances which hold between them. Since this theory makes use of properties, classes and resemblance, it must be determined if a solution can be had "on the cheap" using only classes or resemblance. Such theories, namely class nominalism and resemblance nominalism, have the initial advantage of being more economical than the theory being proposed, because they do not include properties in their ontologies, so arguments must be given against them that serve to outweigh this initial advantage. It will be shown that both theories are inadequate and that their failings will serve as a basis for justifying the acceptance of properties. Hence, the criticism will have both a positive and a negative side. On the negative side, it will be argued that these theories suffer from a false economy. On the positive side, it will be argued that such failings can be used as the basis for a positive reason to accept properties (namely that they cannot be dispensed with). The examination of these two theories will also serve to cast light on aspects of the problem of universals that
will be utilized in theory being presented in this work. Hence, the examination of class nominalism and resemblance nominalism is important. Since the proposed theory will make use of properties (as particulars), it must be determined if a solution to the problem of universals can be achieved by taking properties to be universals. Theories involving transcendent universals, namely Platonic universals theories, and theories involving immanent universals, primarily Armstrong's theory, will be examined in this chapter. This examination is intended to have three results. First, it will show that such theories are inadequate. Second, the defects and failures of the two theories in question will be used as a basis for positive arguments for properties as particulars. Third, the criticism and examination of the two theories will provide results that will be useful in the development of the trope-resemblance theory.

2.2 Class Nominalism

Class nominalism\(^{43}\) is the view that what it is for a token to be of a certain type is for that token to be a member of a certain class. As was noted in chapter one, David Lewis' version of class nominalism is by far the most plausible version. What will be examined here is "pure" class nominalism. The class nominalist answers the question "what is it for a to be F" with the statement "for a to be F is for a to be a member of the class of F things." For example, what it is for a red blood cell to be red is for it to be a member of the class of red things. Properties are given an analysis in terms of classes. According to the class nominalist's analysis, for a to have the property F is for a to be a member of the class of F things.

Class nominalism is not without appeal. First, it is ontologically economical since it admits only objects and classes and does not admit properties as metaphysical entities. Second, classes are well accepted in the philosophic community. For the most

\(^{43}\)Given the distinction between sets and classes, it would be more appropriate to use the term "set nominalism" instead of "class nominalism." However, it is a matter of common practice and tradition to use "class nominalism" (like it is a matter of tradition and common practice to call the United States a democracy when it is, at best, a republic) and I will follow this tradition to avoid confusion.
part, no philosopher would deny the claim that there is a class of cats, for example. While this does not indicate that there are classes, it does serve to provide class nominalism with some appeal. In contrast, there are many philosophers who would deny the claim that there are properties in the metaphysical sense. Third, although the ontological status of classes is a matter of some dispute, the formal theory of classes, set theory, is extremely well developed and extremely attractive to the logicians and mathematically inclined.\(^44\) The usefulness of set theory in the areas of grouping and ordering makes the use of classes and set theory rather attractive as a potential solution to the problem of universals.

Despite these favorable aspects of class nominalism, it seems that no philosopher has endorsed class nominalism\(^45\). The main reason for this seems to be the fact that class nominalism is committed to there being a property corresponding to every class. Since for any \(n\) objects there are \(2^n-1\) non-empty classes into which these objects can be arranged, the class nominalist is committed to a vast number of properties and to properties that seem quite absurd. For example, a class consisting of Dan Quayle, a watermelon, a ball of lint, and a black hole is a perfectly good class, but it would violate one's intuitions to claim that a property corresponds to this class. It is this problem of spurious classes that motivates Anthony Quinton to propose a natural-class nominalism in his "Properties and Classes."\(^46\)

In his paper, Quinton claims that "there are a vast number of classes. Some, but not all, of these, the natural ones, correspond to properties or to groups of coextensive properties."\(^47\) Quinton goes on to define a natural class as follows. Imagine that one has been presented with various wooden objects (tables, chairs, blocks, etc.) of various sorts

\(^{44}\)I have participated in several heated debates on the issue of class nominalism with a fellow graduate student. He was convinced that class nominalism was the solution to the problem of universals, primarily because of the set theory aspects of it.
\(^{45}\)By this, I mean that no philosopher has endorsed what might be called "simple" class nominalism, which involves accepting that a property corresponds to every class.
\(^{47}\)Quinton, p. 34.
so as to give the full range of the word "wooden." If one is then able, without difficulty, to identify new objects as belonging in the same class with the previously met wooden objects, then the class of wooden objects is a natural class. This account of naturalness can be questioned, but for the sake of argument it will be assumed that there is a distinction between natural and non-natural classes, in order to present class nominalism in as favorable a light as possible.

Although natural-class nominalism evades the spurious property difficulty, it suffers from numerous difficulties. Many of these difficulties are presented in detail by Armstrong. Since there are so many difficulties with class nominalism, only on those that are most serious and most relevant to the project at hand will be considered. The main problems to be focused on are grouping problems which neither class nominalism nor natural-class nominalism can solve.

*Identity Condition Problems*

The identity conditions for classes are quite clear. A is the same class as B iff A and B have the same members. Unfortunately for the class nominalist, the identity conditions of classes gives rise to three serious difficulties.

Given the identity conditions for classes and the fact that for the class nominalist, being of a certain type is just being a member of a certain class, it follows that there cannot be coextensive types. However, there certainly appear to be coextensive types. All objects with sizes are also extended objects, so the class of extended objects and the class of sized objects are the same class. Given the class nominalist's analysis, size and extension would have to be the same property, but this is clearly not the case. This is a rather serious defect for class nominalism.

---

48 See Quinton, p. 36 for his exact wording of what it is for a class to be natural.
The class nominalist does have two ways to avoid this problem. Doing so would involve either accepting possible worlds realism or some other form of modal realism. If the class nominalist is willing to accept possible worlds realism and accept that classes range over all possible worlds, then the problem can be avoided in the following manner. If the properties that are coextensive in the actual world are only contingently coextensive, then there will be worlds in which there are entities which do not have both properties. For example, suppose that R and C are coextensive properties in the actual world and that they are only contingently coextensive. Since classes, by assumption, range across possible worlds, the class of R objects and the class of C objects will have as members all the Rs and Cs, respectively, that exist in all the possible worlds. Since R and C are only contingently coextensive, it follows that there will be worlds in which there are objects that are R and not C and objects that are C and not R. Therefore, the class of R objects and the class of C objects will be distinct classes. Because of this, the coextension problem will be avoided and there can be coextensive types, as long as they are not necessarily coextensive.

If the class nominalist would prefer to accept a less robust form of modal realism, for example one in which possible objects are accepted but not entire possible worlds, then a similar sort of reply can be given. In this situation, the nominalist would claim that his classes included both possible and actual objects as members. If R and C are contingently coextensive, then it is possible for there to be R objects that are not C and C objects that are not R. Assuming some form of modal realism, there would be possible objects that are R but not C and possible C objects that are C but not R. Thus, the class of R objects and the class of C objects would be different classes (since they have different members) and hence the coextension problem would be avoided. This is because there

---

50 Since R and C are only contingently coextensive it follows that it is possible for there to be objects that are C and not R and objects that are R and not C. For the realist about possible worlds, for it to be possible for there to be objects that are R and not C and for objects to be C and not R is for there to be such objects in at least one possible world.
can be contingently coextensive properties without the class nominalist being forced by his analysis to claim that the coextensive properties are the same property.

One major flaw in both responses is that neither of them is able to handle cases of necessarily coextensive properties. Examples of such properties are *being trilateral* and *being triangular* and *having a shape* and *having a size*. In terms of possible worlds realism, if R and C are necessarily coextensive properties, then there will be no world in which there are objects that are R and not C and objects that are C and not R. Thus, the class of R objects and the class of C objects would have the same members and hence be the same class and the problem would remain. In terms of other forms of modal realism, if R and C are necessarily coextensive properties then there will not be any possible objects that are R and not C and there will not be any possible objects that are C and not R. Thus, the class of R objects and the class of C objects would have the same possible and actual members and would thus be the same class. Hence, the coextension problem would not be avoided.

Even if there are no necessarily coextensive properties, in addressing this problem the class nominalist is forced to accept some form of modal realism. This is not only contrary to the economical spirit of class nominalism but also raises the price of the theory substantially. This means that the coextension problem is fairly serious for the class nominalist for he has the option of accepting an inability to group entities properly or accepting some form of modal realism. Neither option is very attractive.

A second defect of class nominalism is the contingent being problem. Contingent beings are such that it is possible that they might not have existed and there are classes that contain contingent beings. For example, suppose the class of shaped objects contains

---

51 In this situation, they would be actually coextensive in the sense that, in the example at hand, all actual R objects would also be C objects and all actual C objects would be R objects. However, since there are possible objects that are C and not R and R and not C, the properties are not necessarily coextensive.

52 See chapter 8 of Nicholas Wolterstorff’s *On Universals*, Chicago: University of Chicago Press, 1970 for his version of this argument.
contingent beings. Since any particular shaped object need not exist, one or more of them might not have existed and hence it follows that the class of shaped objects could have been different. Thus, given the identity condition of classes and the class nominalist's analysis of what it is to be a property, the class nominalist must accept that if there had been one more or one less shaped object in this world, then being a shaped object would have been different. The result that stems from the class nominalist's analysis, namely that being an F could have been different simply if there had been one more or less F, is a result that would be unreasonable to accept. After all, if there had been one less shaped object, would being a shaped object really be any different than it actually is?

Once again, the class nominalist has the option of accepting some form of modal realism to avoid a problem his theory faces. By including possible entities into his ontology the class nominalist avoids the contingent being problem since his classes will include the possible as well as actual members of the classes. Because the classes include the possible and actual members, the class cannot be other than it is because it already contains all its possible members and hence the problem is avoided, but at the price of admitting possible entities.

The class nominalist is faced with a rather unpleasant dilemma. Faced with these two problems he has two options. First, he can retain his theory's ontological economy and accept the consequences of the problems. Doing so would increase the problem cost\textsuperscript{53} of his theory since it would leave two serious difficulties unresolved. Second he can embrace some form of modal realism. Doing so would avoid the problem of contingent beings and may enable him to avoid the coextension problem, on the condition that there are no necessarily coextensive properties, but this solution would result in a dramatic expansion of the class nominalist's once sparse ontology. Accordingly, the price of the theory would increase substantially.

\textsuperscript{53}See Appendix A, Methodology.
The problems presented above, it must be noted, can easily be solved by accepting properties. Suppose that P and Q are distinct but coextensive properties. Given, for example, a trope analysis of the situation, P-tropes and Q-tropes are distinct, even though they are never found apart. The problem of contingent beings would also be solved because the number of beings that have a certain property has no bearing on the property being what it is. Accepting properties also has the advantage of avoiding a commitment to modal realism. In contrast with possible worlds and other possible entities, the acceptance of properties seems quite reasonable.

Determinables

As was noted earlier, the problem of determinables is an important sub-problem of the problem of universals, one to which any approach should provide an account. Where M1, M2, and M3 are determinates and M a determinable, the class nominalist offers the following analysis of what it is for M1 and M2 to all be M. M1 and M2 are Ms iff the class of M1s and the class of M2s are subclasses of the class of Ms. At first glance, this analysis seems unproblematic and straightforward. Unfortunately, this is not the case.

Consider the proposition that red is a color. The class nominalist will analyze this as the class of red objects is a subclass of the class of colored objects. However, consider the following. It is true that all red objects have a shape. So the class of red objects is a subclass of the class of shaped objects. By parity of reasoning, given the class nominalist's analysis, it follows that the property red is a shape. Since this is clearly absurd, it must be concluded that the class nominalist's analysis is lacking. This inability to solve the problem of determinables increases the cost of accepting the theory.

---

54 This response is from D.M. Armstrong, Universals, Boulder: Westview, 1989, p. 126. The coextension problem will also be addressed in greater detail in chapter five.
55 This objection is inspired by Frank Jackson's "Statements about Universals", Mind 86, 1977, pp. 427-429. His objections are against nominalism in general and in support of universals.
Conclusion

Class nominalism has the initial advantages of a sparse ontology, the general acceptance of classes, and the effective grouping mechanism of set theory. These three factors are strong points in favor of class nominalism. Unfortunately, it loses its initial advantages under careful examination. Faced with the three identity conditions problems, the class nominalist has the option of accepting that his theory has serious defects or embracing an ontology of possible entities as well as past, present, and future entities. Taking the first option increases the problem cost of the theory and taking the second option increases the cost of the theory through its ontological additions. Since classes are not challenged in this work, the class nominalist retains that advantage. Finally, class nominalism is found to be severely lacking in its ability to solve the problem of determinables and its ability to handle a simple grouping problem. The defect stems not from set theory, but from the fact that class nominalism lacks adequate ontological resources to do the work required of it. In the course of this section, it was suggested that property-acceptors have the resources to solve the problems that class nominalism cannot handle. If this claim can be supported, then the failure of class nominalism and the success of a property accepting theory in this area will count in favor of accepting properties as entities.

2.3 Resemblance Nominalism

Resemblance nominalism is, like class nominalism, a property-denying theory. As such, it starts out with an initial advantage of economy over theories which admit properties. Resemblance nominalism also enjoys the advantage of making use of an effective sorting mechanism, that of resemblance, and has the further advantage that entities certainly do seem to resemble one another and to do so in ways that can ground their division into various groups. For the resemblance nominalist, entities are grouped on

\[\text{\textsuperscript{56}}\text{Carnap presented the best developed version of class nominalism. This version is discussed in more detail in chapter five.}\]
the basis of the resemblance that holds between them into various resemblance classes. These classes are formed around a paradigm case of the entity type in question so that what it is for a particular a and particular b to be of type F is for a and b to resemble a suitable paradigm case or cases of F. For example, a Coke can and human blood are both grouped into the class of red things on the basis of their resemblance to a paradigm red entity and the Coke can is red because it resembles the suitable paradigm case or cases of red.

**Resemblance**

The resemblance nominalist is appealing to what appears to be an obvious fact about reality, namely that entities do resemble one another and that they can be grouped on the basis of resemblance. Resemblance, as the resemblance nominalist sees it, is objective. If a resembles b to degree D, this resemblance is not a matter of opinion and is not exhausted by the attribution of resemblance on the part of humans or other beings. While the objectivity of resemblance might be questioned, it can be granted at this point.⁵⁷

A second feature of resemblance is that it admits of degrees. Sometimes the resemblance between entities is very minimal. For example, neutron stars resemble pencils in that they are both physical objects, but they do not resemble each other in very many ways, so the resemblance between neutron stars and pencils is of a very low degree. Sometimes the resemblance between entities is very great. For example, the degree of resemblance between two #2 standard pencils is very high. The spectrum of resemblance is bounded on one end by complete non-resemblance (although it is likely that any two existing entities have some degree of resemblance, if only that they resemble each other in being existing entities) and on the other end by exact resemblance.

---

⁵⁷In the context of my own theory I will defend the claim that resemblance is objective.
Granting that a given resemblance will occupy some position on the bounded spectrum of resemblance, it can be said that there are three basic types of resemblance: complete non resemblance (N-Resemblance), exact resemblance (E-Resemblance), and some degree of resemblance, but less than exact resemblance (D-Resemblance).

Moreover, D-Resemblance relations are symmetrical. If a D-Resembles b to degree D, then b resembles a to degree D. N-Resemblance and E-Resemblance are also symmetrical, since if a exactly resembles b or a does not resemble b at all, then b exactly resembles a and b does not resemble a at all. E-Resemblance is transitive, so that if a exactly resembles b and b exactly resembles c, then a exactly resembles c. However, D-Resemblance and N-Resemblance are not transitive. For example, Mike might resemble his mother to degree D and his mother might resemble his sister to degree D, but he might resemble his mother more than he resembles his sister. This could be due to the fact that his mother and Mike have very similar hair, skin, and eye color, while his sister and mother have very similar personalities and dispositions. E-Resemblance is also reflexive, while D-resemblance and N-Resemblance are not. Everything resembles itself exactly and nothing only resembles itself to a certain degree or not at all. In addition to being a somewhat obvious truth, this claim can be proved by appealing to the qualities of E-Resemblance. If a E-Resembles b, then b E-resembles a, because E-resemblance is symmetrical. Since E-resemblance is transitive, it can be concluded that a E-resembles a, which is to say that a E-Resembles itself.

E-Resemblance has an interesting quality that is very useful to the resemblance nominalist and to others who wish to use resemblance in their solution to the problem of universals. Since E-Resemblance is symmetrical, transitive, and reflexive, then entities that E-Resemble one another form an equivalence class:\n
The interest of an equivalence class is that by means of its equivalence relation R, it divides up everything between which R holds (the field of R) into mutually

\[^{38}\text{If a relation is symmetrical, transitive, and reflexive, it picks out an equivalence class, by definition.}\]
exclusive classes of objects, classes without any members in common. Inside each equivalence class each member has R to every other member, but fails to have R to any other object. Thus because exact resemblance is an equivalence relation, it divides up the field of things that exactly resemble each others into mutually exclusive bundles. In this respect it behaves like a universal without being one.\textsuperscript{59}

These mutually exclusive classes will have as members all entities which E-Resemble one another and will have no other members. This feature of E-Resemblance is essential to the positive theory to be developed below. So, it is important to determine if resemblance without properties can prove adequate as a solution to the problem of universals. If it can, trope-resemblance theory would be inferior to resemblance nominalism since mine would do the same work for a greater cost. Fortunately for my theory, resemblance nominalism suffers from serious defects and these defects stem not from the resemblance mechanism, but from the rejection of properties as metaphysical entities.

Three Sorting Problems

Resemblance nominalism runs into three very serious sorting problems: those concerning determinables, resemblance and the paradigm problem. The discussion begins with the determinables problem.

The determinables problem is very similar to the problem the class nominalist faced and both problems are generated by the rejection of properties. Take the proposition that red is a color. The resemblance nominalist would analyze this proposition in terms of the resemblance that holds between red objects and a paradigm colored object. For example, what it is for red to be a color is for all red objects to resemble the paradigm color object C to the required degree D. This analysis has the initial advantage of being able to do without determinables.\textsuperscript{60} Unfortunately, this analysis suffers from a serious defect. Red


\textsuperscript{60}The two main advantages of doing without determinables are 1) the ontological economy of doing so, and 2) the fact that doing without them avoids the serious problems that determinables suffer from. These problems will be discussed in chapter 4, in the section on determinables.
objects are also extended, so they also resemble the paradigm extended object. For example, they resemble the paradigm extended object to degree E. By parity of reasoning, it follows that the determinate property red would be a token of the determinable property extension type. Since this is clearly not the case, it would seem that there is something wrong with resemblance nominalism.

The resemblance nominalist can make an appeal to degrees of resemblance. Perhaps it could be argued that red objects resemble the paradigm colored object more than they resemble the paradigm extended object and that this enables the required distinction to be drawn. Unfortunately, if the paradigm colored object is also the paradigm extended object, this distinction cannot be drawn. It is at least possible that the paradigm colored object is also the paradigm extended object. The resemblance nominalist must be able to guarantee that there is no overlap between paradigm objects in order to make his reply hold. Unfortunately, there does not seem to be any reason why one object cannot be the paradigm for two or more types.

The second problem is the resemblance problem. The resemblance nominalist has at her disposal objects, classes, and resemblance. Since resemblance admits of degrees, the resemblance nominalist has no difficulty with cases in which one object resembles another object more than it resembles a third object. However, objects do not just resemble one another in greater or lesser degrees, they also resemble one another in varying degrees in certain respects. For example, consider a baseball, an orange, and a white piece of paper. The baseball and orange resemble each other more than the baseball resembles the white paper in terms of shape while the baseball resembles the paper more than it does the orange in terms of color. Unfortunately, the resemblance nominalist only has at her disposal degrees of resemblance and not types of resemblance. Her analysis is simply not fine grained enough to do the work required of it. As such, resemblance nominalism cannot handle this simple grouping problem, which counts against it.
The resemblance nominalist could attempt to address this problem by accepting
types of resemblance in addition to degrees of resemblance. However, doing this would
simply push the problem back, since the grouping of resemblances into types would have
to be analyzed and the problem, which this reply is intended to solve, would simply arise
again, which is no solution. This is because an analysis of the resemblance between
resemblance types would need to be provided and the resemblance problem would simply
arise again at this level. The problem can be avoided by accepting properties which
resemble each other. Accepting properties would provide a basis for types of resemblance
and would provide a basis for a fine grained enough analysis to solve the problem.\textsuperscript{61} Of
course, accepting properties would be an abandonment of resemblance nominalism, so
this is not a viable alternative for the resemblance nominalist.

The third problem is the problem of overlapping paradigms. Paradigm objects may
very well have other "properties" besides the "property" they are serving as a paradigm
for. For example, the paradigm cubical object will also have a certain size, a certain color,
and a certain mass. Suppose that R and C are distinct properties, such as \textit{being red} and
\textit{being cubical}. Suppose that the paradigm R object is also the paradigm C object and
suppose further that the R objects resemble the paradigm object in question to degree D
and the C objects also resemble it to degree D. Since the resemblance nominalist's
analysis is not fine grained enough to distinguish between objects resembling one another
in certain respects, there will then be only one resemblance class of objects resembling
the paradigm to degree D and this class will be composed of the R and the C objects.
Unfortunately, it follows from the resemblance nominalist's analysis that R and C are the
same property. For example, \textit{being red} and \textit{being cubical} would be one and the same
property. This contradicts the assumption that R and C are distinct properties and leads to
absurdity. For example, \textit{being red} and \textit{being cubical} would be the same.

\textsuperscript{61}I will address this in the course of my positive theory of resemblance.
Russell's Argument

In *Problems of Philosophy* Russell presents the following attack against resemblance nominalism:

If we wish to avoid the universals *whiteness* and *triangularity*, we shall choose some particular patch of white or some particular triangle, and say that anything is white or a triangle if it has the right sort of resemblance to our chosen particular. But then the resemblance required will have to be a universal. Since there are many white things, the resemblance must hold between many pairs of particular white things; and this is the characteristic of a universal. It will be useless to say that there is a different resemblance to each pair, for then we will have to say that these resemblances resemble each other, and thus at last we shall be forced to admit resemblance as a universal. The relation of resemblance therefore, must be a true universal and having been forced to admit this universal, we find that it is no longer worthwhile to invent difficult and implausible theories to avoid the admission of such universals as whiteness and triangularity.62

The above attack is potentially fatal to resemblance nominalism but also to the theory defended below. So it requires closer examination.

The arguments from the cited passage can be presented in slightly modified manner as follows:

The First Argument:

1) A particular is white iff it resembles the paradigm white object (the resemblance nominalist's position).
2) There are many white things.
3) Therefore, the same resemblance must hold between many pairs of particular white things.
4) Therefore, resemblance is a universal.

The Second (Regress) Argument

1) There is a different resemblance relation between each pair of white objects (the resemblance nominalist's position).

---

2) By the resemblance nominalist's analysis, each resemblance is a resemblance because it resembles the paradigm resemblance.

3) The resemblance between each resemblance and the paradigm resemblance is a resemblance because it resembles the paradigm resemblance, and so on into a regress.

4) To avoid the regress, resemblance must be admitted as a universal.

5) If one universal is admitted, there is no reason not to admit the others.

If Russell's arguments hold, resemblance nominalism (as well as trope-resemblance theory) will face an extremely difficult problem. Fortunately, Russell's arguments can be countered.

In order to avoid admitting universals, the resemblance theorist must be able to defuse the regress that Russell employs. The regress can be defused, surprisingly, by accepting the infinite regress. The regress is generated if the resemblance theorist takes the resemblances to be particulars. Its force comes from the fact the regress will require the resemblance theorist to accept either an infinite number of particular resemblances or a universal resemblance. What the resemblance theorist should to is accept an infinite number of resemblances and not accept the universal resemblance. While there will be an infinite number of resemblances for each resemblance, each resemblance will still be a particular. This undercuts Russell's argument and the resemblance theorist does not need to accept that resemblance is a universal, providing he is willing to pay a price.

However, by accepting the regress, the resemblance nominalist has a price to pay in the form of the infinite number of resemblances for each resemblance. This is, to say the least, massively uneconomical. If it can be effectively argued that the initial resemblance is not an ontological entity, then the regress can be shown to lead to no ontological expansion.
The process of showing that resemblance is not an entity begins with an argument for a distinction between relations. Certain relations, which shall be called EN-relations (entity-relations), are ontological entities over and above the entities involved in the relation. Other relations, which shall be called NE-relations (non-entity-relations) are nothing (ontologically) over and above the entities involved in the relation. For example, a dyadic EN-relation would consist of the two related entities and the relating entity, while a dyadic NE-relation would involve only the two related entities and there would be no third, relating entity. The discussion now turns to EN-relations and NE-relations.

For a relation to be an EN-relation, it must meet the following two conditions. First, it must be possible for the relation to change without there being any change in the related entities. If a relation can undergo change without there being a change in the participants, this gives some reason to believe that the relation is something over and above the participants. However, in itself, this is not a conclusive reason to accept the existence of a relating entity. Second, there must be a clear need for there to be an entity over and above the participants in the relation or other good reasons to accept such an additional entity. In the case of an EN-relation, the existence of the participants is not a sufficient condition for the relation to hold. So, if God were to create two entities, He would have to create a third entity for an EN-relation to hold. For example, relations of distance are plausible candidates for EN-relations. First, the distance relation between two objects can change without there being an change in the objects themselves. Second, there are good reasons to accept that space-time is an entity in its own right. In this example, the distance relation would be constituted by the space between the two entities. Using the creation example, if God were to create a and b, he would also need to create some space in order for them to be a certain distance apart. Hence, it is reasonable to accept that distance relations are EN-relations.
For a relation to be an NE-relation, it must meet two conditions. First, the relation must be such that it cannot change without there being a change in the participants. If it is not possible for a relation to change without there being a change in the participants, then there is good reason to believe that the relation is simply constituted by the participants, or certain features of them. However, this is not, in itself, a conclusive reason to reject that there is a relating entity. Second, there must be good reasons to reject the existence of an entity over and above the participants, or at least no good reason to accept such an entity. In the case of NE-relations, the existence of the participants is sufficient for the relation to hold. If God were to create the participants, He would not need to create an additional relating entity for the relation to hold. The relation of taller than is a good example of an NE-relation. Suppose that \( a \) is ten inches tall and that \( b \) is six inches tall. It follows that \( a \) is four inches taller than \( b \). In order for this relation to change, either \( a \) or \( b \) would need to change. For example, if \( b \) grew to be twelve inches tall, then \( b \) would now be two inches taller than \( a \). Hence, the relation taller than meets the first condition of being an NE-relation. Now, consider the second condition. There does not seem to be any good reason to postulate a third, relating entity to account for \( a \) being taller than \( b \). It seems perfectly reasonable to say that \( a \) is taller than \( b \) simply because of the sizes of \( a \) and \( b \) and that no other entity is required. If God were, for example, to create \( a \) and \( b \), He would not need to create a third entity in order for \( a \) to be taller than \( b \), since the height of each is created with \( a \) and \( b \).

Now, consider the relation of resemblance. Suppose that \( a \) and \( b \) resemble each other to degree \( D \). Can this resemblance change without a change in \( a \) or \( b \)? If resemblance is an EN-relation then it can. However, it seems unreasonable to claim that two objects could remain exactly the same and yet have the resemblance(s) that holds between them change. For example, suppose that \( a \) is a light green sphere and that \( b \) is a green ovoid. If resemblance is an EN-relation, then it would be possible for \( a \) to resemble
b exactly or for a and b to resemble each other not at all. This is because if the resemblance is a distinct entity from a and b, then it is at least logically possible that it be altered without affecting either a or b. However, it does not seem reasonable to believe that the resemblance(s) that holds between two objects could change without there being a change in the participants. Now, to the second condition.

There does not seem to be any good reason to postulate a resemblance entity over and above the participants in a resemblance relation to account for their resembling one another. The case of a resembling b is analogous to the case of a being taller than b. In the example given, it is more reasonable to attribute the resemblance between a and b to the fact that a is light green in color and spherical in shape and the fact that b is green in color and is ovoid in shape than to some mysterious third resemblance entity. If God were to create two objects, it is not the case that He would need to create a third entity in order for them to resemble each other. To claim otherwise would be to accept that it would be possible for a light green sphere and a green ovoid to exactly resemble one another and it would also be possible for them to resemble each other to no degree (God could simply not create the resemblance relation entity). Until good reasons are given to accept that resemblance is an entity in its own right, it is best (and in accord with Occam’s Razor) to take resemblance to be an NE-relation. It can now be shown how taking resemblance to be an NE-relation provides the resemblance theorist with a way to avoid the ontological expansion regress.

The ontological expansion regress is avoided in the following manner. While there will be an infinite number of resemblances for each case of resemblance, none of these resemblances will be entities. This is because resemblances, as has been argued, are NE-relations and not EN-relations. Since the initial resemblance and all the resemblances generated by the regress are not ontological entities, the regress will generate no ontological expansion. It is, in other words, an ontologically empty regress. It may be
responded that while the regress is ontologically "empty," it is still infinite and hence still problematic. However, as Keith Campbell argues "everyone who has not yet celebrated their centenary labors under an infinitude of characteristics, those of being not yet 100 years old, not yet 101, not yet 103...We take such infinitudes in our stride, and the resemblance regress is no more burdensome." Thus, the ontological regress has been defused.

Finally, the resemblance theorist can point out that those who accept universals face their own regress problems. On a universal acceptor's theory, a particular a is F iff a instantiates the universal F. So, a's instantiating F is a token of the type instantiations and, as such, for instantiation to be an instantiation is for it to instantiate instantiations, which is a viciously circular analysis. As will be argued later, the universal acceptor is much worse off than the resemblance nominalist in this area, since he has to admit that instantiation is something over and above the particular and the universal it instantiates, whereas the resemblance nominalist can argue that resemblance is nothing over and above the particulars that resemble one another. Accepting universals is no solution to this type of regress argument since the universal acceptor ends up in a situation at least as problematic as the one the resemblance nominalist faces. Hence, this argument cannot serve to motivate an acceptance of universals over a resemblance theory.

Conclusion

Resemblance nominalism has two strong points in its favor. First, it employs a highly effective sorting mechanism, that of resemblance. Second, its ontology is very economical. By admitting only metaphysically simple objects, resemblance nominalism has a much lower initial cost than theories that admit properties as entities.

However, resemblance nominalism suffers from three serious difficulties. These are the determinables problem, the resemblance problem, and the paradigm problem. These

---

three difficulties arose from the fact the resemblance nominalist's rejection of properties. Accepting properties would meet these three difficulties, which counts in favor of accepting properties. While these three problems were serious for resemblance nominalism, the attack on resemblance which was intended to show that accepting resemblance entailed accepting universals failed. Thus, it may be concluded that the defects of resemblance nominalism stem from the rejection of properties and not from the mechanism of resemblance.

Given the fact that the problems of both class nominalism and resemblance nominalism were due to the rejection of properties as entities by the class nominalist and resemblance nominalist, it seems reasonable to consider the acceptance of properties as a means of solving these difficulties and as a basis for solving the problem of universals.

2.4 Transcendent Universals

The previous two sections indicated quite clearly that property denying theories do not fare well as attempts at a metaphysical solution to the problem of universals. In light of this, it seems that it would be reasonable to accept the existence of properties. The problem is, at this point, to determine what the most plausible account of properties is. One of the oldest views of properties is a view attributed to Plato and explicitly held by Russell. On this view, properties are transcendent universals. As the name implies, transcendent universals are characterized by existing outside of the normal spatio-temporal realm. It is via a special relationship with these universals that particulars are what they are, in terms of being certain types of things. This relationship has borne a variety of names, such as 'imitation', 'participation', and 'instantiation'. For the sake of clarity, term 'participation' will be used, without any commitment beyond the assumption

64Plato's exact view is a matter of some dispute. Some, like my colleague Norman Mooradian consider Plato to be best characterized as holding to a resemblance theory in which particulars in the material world are grouped on the basis of their resemblance to the paradigm Forms. Fortunately, Plato's actual views are not a matter of dispute here.

that participation is the special relation that is supposed to hold between particulars and transcendent universals.

The essential difference between immanent universals and transcendent universals is that transcendent universals can exist uninstantiated. This is to say that such a universal can exist even when no particulars in space-time have that property. Uninstantiated universals, by hypothesis, do not exist within space-time, so they must exist "someplace" else. Typically, this realm of universals is referred to as a "Platonic Heaven" which is a timeless, eternal, and perfect realm of timeless, perfect, and eternal universals.

Transcendent universals are not without their appeal and they have been adopted in modified forms by many philosophers.\(^6^6\) The main appeal of TU theory is that it is a property-accepting theory. Since the previously examined theories suffered defects as a result of their lack of properties, the inclusion of properties makes TU theory appealing. Of course, properties are hardly unique to TU theory, but it does have its other appealing factors. One is that such universals can be used to provide a metaphysical grounding for the meaning of general terms, although such accounts are hardly unproblematic.\(^6^7\) A second appealing factor is that they provide a set of absolute and objective standards by which to judge earthly particulars. Of course, this is quite independent of the problem of universals. Addressing either of these points would take me very far afield of the topic at hand, so they will not be addressed further.

\(^{66}\) For example, Descartes' archetypes are clearly direct philosophic descendants of Plato's forms. See Descartes Meditations on First Philosophy, p. 29 in John Cottingham, Robert Stoothoff and Dugald Murdoch (trans.) The Philosophic Writings of Descartes Volume II Cambridge: Cambridge University Press, 1988.

\(^{67}\) One problem is that if universals provided the meaning for all general terms, it would follow that any meaningful term would have a corresponding metaphysical entity. For example, since "vampire", "demon" and "phlogiston" are all meaningful, it follows that there are the properties of being a vampire, being a demon, and being phlogiston, which is a rather odd result. There are other, more serious difficulties that are within the domain of philosophy of language.
Uninstantiated Universals

One reason to accept the existence of transcendent universals (TUs) is that they can exist uninstantiated. Since uninstantiated universals can do various kinds of philosophic work within a theory, the ability of TUs to exist uninstantiated is a reason to accept them. For example, those who accept uninstantiated universals may be able to provide an account of possible properties in terms of uninstantiated universals and they can provide a straightforward account of the fact that properties become instantiated and can and do cease to be instantiated. If it is assumed, for the sake of argument, that there are properties, it is reasonable to believe that properties that were previously uninstantiated became uninstantiated at some time and that properties that were previously instantiated have become uninstantiated at some time. For example, suppose that being alive is a property. It is clear that this property was not instantiated prior to the existence of life because there were no living things. The property being alive could also cease to be instantiated in the future if at some time there were no living things left. Further, suppose that the dinosaurs had some property unique to them, call it property D. Now that the dinosaurs are extinct, property D is no longer instantiated. Of course, with some genetic engineering, the dinosaurs could conceivably be brought back, and hence D would be instantiated again. What is needed is an account of such situations. One option is to accept that properties can be created and destroyed. This option and another option will be examined in chapter four. A third option is to accept uninstantiated universals, which provides an argument for the TU theorist.

The TU theorist can offer the following argument for the acceptance of uninstantiated universals. Properties can and do become instantiated and can and do cease to be instantiated. A plausible explanation of this is that properties can exist uninstantiated and hence are TUs.
It is important to note that any theory that accepts properties, regardless of the specific account of properties that is accepted, must provide an account of the fact that new properties certainly seem to have been and continue to become instantiated and that properties have and continue to cease to be instantiated. The TU theorist offers a straightforward account of such occurrences: a property becomes instantiated when the special relation exists between a universal and a particular and a property ceases to be instantiated when the relations between a TU and all its particulars cease to hold. Since universals can exist prior to being instantiated, there is no need to provide an account as to how properties are created and since a TU that is uninstantiated continues to exist, it does not have to be re-created if the property is instantiated again later. The TU theorist also has an advantage in that he has an account of properties that can be instantiated but are actually never instantiated. Such possible properties are not some sort of new metaphysical entity, they are simply uninstantiated universals that exist but are never instantiated. It could be argued that their existence grounds the possibility of their being instantiated. Other theories will have to compete with the TU theory in terms of how well they deal with this problem.

The Participation Regress

Earlier it was mentioned that there is a special relation that holds between spatial-temporal particulars and TUs and called this relation "participation." Since participation is a relation, the TU theorist is, prima facie, committed to providing an analysis of participation and this analysis has the potential of resulting in a vicious regress. The regress can be constructed as follows. On the TU theorist's analysis, what it is for a particular a to be of type F is for a to participate in the TU, F. Since participation is a relation, it too must be analyzed. What it is for a particular participation, p, to be a participation is for p to participate in participation. Hence, the analysis is viciously

---

68 Plato's view is complicated by the fact that he admits souls to his ontology, which are particulars but are like the forms. They can also "commune" with them and may be able to enter the realm of the forms.
circular, for participation can never adequately analyzed. This regress is similar to the regress discussed in the context of Russell's attack on resemblance nominalism and the TU theorist, like the resemblance nominalist, may be able to escape the regress.

In order for the regress to run, participation must be a relation of the sort that the TU theorist is committed to analyzing. If the relation of participation, like the relation of resemblance, involves nothing over and above the entities involved in the relation, then the regress cannot be run because there is no need to analyze the relation. However, if participation is something over and above the involved entities, that the TU theorist is obligated to analyze, then the regress runs.

The TU theorist can avoid the participation regress by holding that participation is nothing over and above the particulars and the TUs that are involved in instances of participation. One such view would be a TU paradigm theory in which particulars, which are metaphysically simple, are grouped based on their participation with various TUs. This participation would be functionally similar to resemblance. Such a view would avoid the defects posed by the impure paradigms (paradigms with many qualities), but the other problems, which stem from the metaphysical simplicity of the particulars, would remain unresolved. For example, the sorting problem of resemblance in certain respects between particulars remains, even if TUs are admitted as paradigms. This is because it is at least possible for the R and B objects to resemble the paradigm R and the paradigm B to the same degree. Thus, there would still be just one resemblance class, that of the Rs and the Bs. So being an R object would be the same thing as being a B object, even though R and B are not, by hypothesis, the same properties. To avoid this problem, the TU theorist would need to accept that the objects of the world have their own properties which are grouped in terms of their resemblance to a TU. However, such a view would be a TU and trope-resemblance theory or a TU and immanent universal-resemblance theory. Since both of these theories would do no more work than there non-TU counterparts,
there would be little reason to accept such views. The any TU-paradigm view would also inherit the defects, if any, particular to TUs. Hence, the cost of accepting a TU paradigm theory far exceeds its benefits. Thus, it is reasonable to reject the option of taking participation to be nothing over and above the particulars which participate in TUs. However, taking this option leaves the TU theorist in the grips of a vicious regress.

Faced with the regress, the TU theorist can accept the regress and hence accept participation as the third type of entity in her ontology (in addition to particulars and TUs, there would also be participation). Taking participation as a third type of entity would increase the cost of the theory, but perhaps not to an unacceptable level. This is not very desirable, but the advantages of a TU theory may be able to offset the cost.

Imperfections and Difference

One of the problems Plato was faced with was accounting for the imperfection of the physical world relative to the perfection of the forms as well as the differences in degrees among particulars (for example, one person being more just than another). This problem of imperfection and difference is one that the modern TU theorist also faces. The problem of degrees can be presented in the following manner.

Spatial-temporal particulars, by hypothesis, have the properties they do in virtue of their participation with various TUs. These TUs are, by hypothesis, perfect and unique. In contrast, spatial-temporal particulars are imperfect and often differ from one another in various degrees. For example, suppose, along with Plato, that Justice is a TU and that A is slightly more just than B who is slightly more just than C. All three people are just in virtue of their participation in the TU of Justice, yet each person differs in his degree of justice. The problem is to account for this. One option, which is somewhat similar to the view Plato held, is to account for the degrees in terms of the particulars themselves having various qualities which affect how they instantiate properties. Just as, for example, impressing the same seal onto mud, crumbly soil, and sealing wax will result in
impressions of varying quality, justice will make different "impressions" on particulars of varying quality. The problem with this option is that it seems to require that particulars already possess certain properties which affect how they instantiate other properties and, according to TU theory, particulars have properties solely in virtue of their participation in various TUs. If particulars had no qualitative differences, then they would all instantiate the forms in the same manner. If particulars do differ qualitatively, then this would have to be in virtue of their participating in various forms. In order to account for the difference in degrees, there would need to be a TU for every possible degree of particular quality such that each particular participated in a certain TU which would provide it with the property which would determine the degree to which it would participate in other TUs. Unfortunately, this postulation is ad hoc since there are no independent reasons to accept the existence of such TUs beyond their ability to solve this particular problem. So, this option should be rejected.

A second, more plausible option is to accept that participation, like resemblance, admits of degrees. The difference in degrees in particulars (for example, the different degrees of justice instantiated by A, B, and C) is due to the differences in degrees of participation. Unfortunately, the original question will arise all over again and the TU theorist will need to account for the differences in degree between various participations. Since an appeal to degrees of participation would take the TU theorist in a circle, this option is not a viable one. Perhaps the best option would be to take participation as an unalloyed primitive and accept the cost.

Determinables-Determinates

TU theory has no difficulty with determinables. In a sense, each TU is a determinable for the TU F is F and not any determinate F and the TU F serves to group all the determinate Fs. For example, the TU mass is not a determinate mass, it is simply mass itself, and it is in virtue of the TU mass that all the determinate masses are masses.
So far, the TU theorist faces no problems with determinables. Unfortunately for the TU theorist, his account suffers from a serious difficulty.

The TU theorist claims that for a particular a to be F is for that particular to participate in the TU F. However, particulars have determinate properties (for example, a stone has a certain mass and not just mass) and the TU theorist must be able to account for how participating in the TU F results in a having a determinate F. There seem to be two approaches. One is to claim that it is something about the particulars that results in the determinable TUs being instantiated as determinates by particulars. While it is clear that this something cannot be a property (for obvious reasons) of particulars, it is unclear exactly what it might be about particulars that does the required work. A second option is to claim that the participation somehow results in determination. This would involve packing more into participation and would increase its cost and hence the cost of the theory.

Problems with Two Kinds

The TU theorist accepts the existence of two distinct realms, one of space-time and the Platonic Heaven. Alternatively, a TU theorist who did not accept the existence of realms as entities in their own rights could accept a division between spatial-temporal entities (particulars) and non-spatial-temporal TUs. On such a view, the realm of particulars would be nothing over and above the sum of the particulars and the relations between them and the platonic realm would be nothing beyond the TUs. While this dispute is important and interesting, it need not concern me here for the problem at hand applies regardless of whether realms are entities in their own right or not.

If the TU theorist postulates two distinct realms, then participation will be a relation that crosses between two realms and it will at least be a relation between two very distinct types of entities. Participation then, is an odd sort of hybrid entity that (if there

---

69This problem was mentioned (in one sentence) in David Armstrong's *Universals*, Boulder:Westview Press, 1989, p. 76.
are two realms) supposedly exist both within space-time and outside of space-time or at least one that is supposed to exist between spatial-temporal and non-spatial-temporal entities. Since it is rather counter intuitive to claim that an entity exists both within space-time and outside of space-time, this feature of participation makes it a rather counter intuitive (and hence more costly) entity, at least until the mystery is cleared up.

A second difficulty that the TU theorist faces is a difficulty that is analogous to the one commonly raised against Cartesian (substance) dualism. The usual objection to Cartesian dualism is that it seems impossible for non-extended substances (namely minds) to causally interact with extended substances (bodies). If this is a serious problem, then the TU theorist is in an even worse situation, for his TUs are not merely non-spatial, they are also non-temporal. Participation, as it stands, is a very mysterious and problematic relation. It seems prudent to bring properties out of the Platonic Heaven and down into the world.

Timelessness

As has been noted, TUs are not temporal entities. However, these TUs are active in the sense that it is in virtue of participation with these TUs that worldly particulars are what they are. Participation relations also vary across time. For example, an object that is now white and cubical in virtue of its participation in the appropriate TUs, might become gray and mashed up in shape (due to age and mistreatment) and it would then stand in other participation relations.

Activity certainly seems to presuppose time. For an entity to bring about an effect in another entity requires some activity on the part of the entity that brings about the effect since it is unclear how an entity would act without acting. Since TUs bring about effects in spatial-temporal particulars, it follows that they must be engaged in activity, and hence that they must be temporal entities. Unfortunately, according to the TU theorist, they are not. The TU theorist must be able to reconcile the active role that TUs
are supposed to play in the affairs of the spatial-temporal world with their timelessness. The TU theorist could reply that the TUs are not active, but the relation of participation is. Unfortunately, the TUs would still be involved in activity, in this case changing relations. After all, if TUs are involved in participation, then they are engaged in activity.

It seems likely that the non-temporal nature of TUs renders them incapable of bringing about events in the spatial-temporal realm. If the TUs bring about events (like particulars having certain properties), then they must be active and hence temporal entities. The need for active TUs is even clearer in the case of active properties (such as being in motion, exploding, and so forth). It is unclear how non-temporal TUs could bring about such occurrences as movement, running, and explosions in the spatial temporal world. It is, in fact, difficult to imagine how a non-temporal entity could even exist. While eternal \(^{70}\) entities do make sense (since, if matter cannot be destroyed, there are plenty of eternal entities), non-temporal \(^{71}\) ones seem conceptually impossible. It is unclear what it would be to exist outside of time. Of course, if the TU theorist brings her TUs into time, then they are no longer TUs, but are immanent universals. The non-temporal existence of TUs is extremely problematic for TU theory, so it seems reasonable to bring properties into time.

Conclusion

TU theory has a variety of factors in its favor. First, TUs can be used to ground the meaning of general terms (though not without problems) and they can serve as perfect, objective standards of judgment. Third, TUs can exist uninstantiated and hence TU theory easily deals with the problem of properties that are newly instantiated, cease to be instantiated, or can be instantiated but never are. On the negative side, TU theory faces severe difficulties. First, there is the participation regress. Second, there are the various

\(^{70}\) Entities whose temporal boundaries extend from the beginning to the end of time.

\(^{71}\) Entities that do not occupy any points on the temporal dimension or simply entities that do not exist within time.
problems that arise from the non-spatial-temporal nature of the forms. Third, there are the problems of degrees and determination. Finally, the timeless nature of TUs causes the theory problems.

As should be clear, the problems that TU theory suffers from stem directly or indirectly from the non-spatio-temporal nature of the TUs and not from the acceptance of properties on the part of the TU theorist. Rather it is the very acceptance of TUs that causes the difficulties. In the light of these results, it seems reasonable to accept properties, but to bring them out of the Platonic Heaven and into the realm of particulars. The best developed contemporary theory of such universals is David Armstrong's.

2.5 Immanent Universals

Immanent universals are universals which, in contrast with transcendent universals, exist within the spatial-temporal realm and have definite locations in space and time (except relations, which lack locations). Because of this, immanent universals cannot exist uninstantiated. However, while they are spatial-temporal entities, they are very special spatial-temporal entities. A vital feature of IUs that distinguishes them from other spatial-temporal entities is that IUs can be multiply located. This means that an IU can be entirely present in two or more distinct spatial positions at the same time. IUs differ from TUs in that IUs are within space-time and TUs are not and IUs differ from tropes in that IUs can be multiply located and tropes cannot.

For the IU theorist, for a particular a to have a property F is for a to instantiate the immanent universal F. For example, a Coke can is red because it instantiates redness. For two particulars, a and b, to both be F is for a and b to instantiate F, and F is one and the same IU in both instances (this is where the ability for immanent universals to be multiply located does its work). For example, two Coke cans are both red because they both instantiate the same redness. This sameness is a matter of strict, numerical identity according to the IU theorist. The IU theorist gives a similar analysis of relations.
The IU theory is not without its appeal. One motivation to accept IU theory, or at least its rejection of TUs, is the appeal of Naturalism\textsuperscript{72}. Naturalism is, following Armstrong's usage, the view that all that exists is the spatial-temporal world. The existence of the spatial-temporal world is (almost) beyond doubt and it is reasonable to assume that it exists. In contrast, the existence of entities outside of the spatial-temporal world, such as possible worlds and uninstantiated universals, is something quite a bit more difficult to establish. Good reasons would be required to accept the existence of such entities and the burden of proof rests on those who postulate them. Further, Naturalism is ontologically economical. Therefore, those who find properties appealing will have good reason to place them within space-time, especially in the light of the defects that TU theory suffers from.

Of course, the above only provides motivation to place properties within space-time not a motivation to accept IUs. Immanent properties can be either particulars (tropes) or universals. Those who are willing to accept properties will find a strong motivation to accept IUs in the fact that the solution to the problem of sameness that the IU theorist offers is one based on identity. In the case of simple properties, two particulars are both F if they both instantiate the IU F. In the case of complex properties (where a higher level property has as constituents lower level properties) groupings are based on partial identity. Partial identity involves the complex properties having some (but not all) identical constituent properties. Two further motivations to accept IU theory are as follows. The first and weakest of the two motivations to accept immanent universals over tropes is that most natural languages have a subject-predicate structure that motivates the acceptance of universals. In these languages the presence of a property is indicated by the use of a general term as a predicate. For example, 'the car is red' is one such sentence. Since such general terms can be used with the same import to describe many other things,

\textsuperscript{72}Aristotle, of course, deserves credit for bringing universals into the world, so to speak.
it would seem that each correct use of a general term is ultimately grounded in the presence of a universal (or universals). For example, in the sentences 'the boat is red', 'the car is red', 'the blood is red', 'red' refers to the universal red, which is the same in each instance. Of course, moving from the way people use language to metaphysical commitments is a one that must be taken with great care and one that would require justification. The second, and more powerful motivation to accept immanent universals over tropes is as follows. As will be shown later, the trope theorist makes use of a primitive notion of resemblance in his proposed solution to the problem of universals. The universal theorist, in contrast, can offer an analysis of resemblance in terms of partial identity. On this view, for two objects, \( a \) and \( b \) to resemble each other in respect \( F \) is for \( a \) and \( b \) to each instantiate the universal \( F \). Because the universal theorist analyzes resemblance while the trope theorist takes it to be a primitive the universal theorist gains an initial advantage in theoretical economy. There are, of course, other motivations for accepting IUs. Nevertheless, the IU theory is not without its difficulties.

**Instantiation Regresses**

For the IU theorist, instantiation is a relation that holds between particulars and universals and it is in virtue of these relationships that particulars have properties. This relationship of instantiation suffers from three serious regress problems: the analysis regress, the requirement regress, and the ontological regress. The discussion will begin with the analysis regress. The IU theorist is committed to taking the relation of instantiation to be a universal relations because, as Armstrong states, "prima facie, ...

---

73 See, for example, David Armstrong, *What is a Law of Nature*. Cambridge: Cambridge University Press, 1983 and Fred Dretske "Laws of Nature" in *Philosophy of Science*, 44 (1977), pp. 248-268. Those who seek an account of the laws of nature may find the acceptance of universals useful in this area. Armstrong takes laws of nature to be dyadic relations of necessitation or probabilification which hold between universals. These laws of nature are themselves universals, and all laws of nature are instantiated (since Armstrong rejects all uninstantiated universals). Armstrong's account of laws runs into serious difficulties involving functional laws which he can only solve by accepting determinables (which he, in an earlier work, gives strong arguments against) or some form of modal realism. The motivating force of the laws of nature use for IUs may be undercut by the defects of the resulting theory of laws.
however, resemblance is a universal, found wherever there are things having properties."

The IU theorist's analysis for what it is for particulars a and b to stand in R is for a and b to instantiate the IU R. However, instantiation is a universal relation, albeit one that holds between particulars and universals. Unfortunately, the analysis of instantiation will itself include instantiation and a vicious regress will arise in which instantiation is never itself analyzed (though the IU theorist is still committed to analyzing it). One way to try to escape this difficulty is to claim that instantiation is nothing over and above particulars and IUs. However, this will not do. Consider the IU F and the particulars a and b. The mere existence of a, b, and F is not sufficient to bring about a being F or b being F. Something more is required and this is instantiation. Instantiation is something more than the mere existence of a particular and a IU, it is a special relation that exists between them. Thus, this option is not a viable one for the IU theorist. A second option is to accept instantiation as a primitive and forgo analysis. Since every theory requires primitives, this option is viable. However, this move could well increase the cost of the theory, but perhaps less so than the cost accrued by other theories for their primitives.

The second regress is the requirement regress. The regress has the following general form: if A logically requires A in order for A to be the case (if A must be logically prior to itself), then A can never be the case. For example, suppose the only way for A to exist is for A to create itself. Then A can never exist, for A's existence logically requires A to exist before it exists, which is impossible. Now consider the case of instantiation. The instantiation of a universal logically presupposes the existence of instantiation. In order for the IU of instantiation to exist, it must be instantiated. Unfortunately, in order for instantiation to be instantiated, it must exist. Hence, the existence of the IU instantiation requires that instantiation be logically prior to itself, which is clearly impossible. This

75While every theory has primitives, some primitives are more costly than others. For example, taking God as a primitive would be more costly than taking identity as a primitive.
repress can be avoided if instantiation is not itself a universal since it would no longer need to be instantiated. Taking instantiation as a primitive is becoming an increasingly attractive option as the difficulties in taking it to be a universal begin to pile up.

While it seems to be the case that the requirement regress is a serious problem for the IU theory, its seriousness can be called into question. Therefore, it will be assumed, for the sake of argument, that the initial instantiation becomes instantiated. Suppose that particular a instantiates universal U. If instantiation is a universal, then "must not the pair, a and F, instantiate the universal of instantiation, and so ad infinitum?" This regress is uneconomical, as Armstrong admits. One option the IU theorist has is to play the supervenience gambit. This argument is that while the initial instantiation is a universal, the instantiations generated by the regress are not universals. These further instantiations supervene on the initial instantiation and hence there is no ontological expansion. However, if the IU theorist accepts the initial instantiation as a universal there does not seem to be a principled way to deny that the others are not. There does not appear to be any good, independent reason to accept the supervenience of the other instantiations beyond the initial instantiation except for the IU theorist's need to avoid the regress. Of course, this "reason" is ad hoc in character. The IU theorist is committed to analyzing universals and if instantiation is a universal, then it must be analyzed. There does not seem to be any reason to grant the IU theorist an exception here, except to enable him to solve this problem, which is hardly a good reason. At this point, it does not seem that the IU theorist can maintain in a non ad hoc way, both that the initial instantiation is a universal and that the other instantiations are not. Of course, those who do not consider an infinite ontological expansion problematic will not be fazed by this regress argument.

\footnote{DM Armstrong, Universals, Boulder: West View Press, 1989, p. 55.}
and will not need to reply to it. On the other hand, accepting such an expansion as unproblematic certainly runs contrary to the spirit, if not the letter, of Occam's Razor.

At this point, it seems well worth it for the IU theorist to consider taking instantiation as a primitive, pay the price, and forgo the (problematic) analysis. While such a move would result in an increase in the price of the theory, it would avoid the regress problem. Since every theorist is entitled to primitives (as long as they pay for them), this move would be an acceptable one.

Relativity Argument

According to modern physics, which is based on Einstein's special theory of relativity, there is no such thing as absolute and universal time. Instead, time is seen as being relative to each thing in the sense that each thing carries around its own personal time scale which does not, in general, agree with other thing's time scales. The relativity of time is subject to empirical proof. For example, if one precision atomic clock is left on earth and another is placed into a high speed rocket, the clock in the rocket will lag behind the clock left on earth and if one clock is in a higher gravity field than another, the clock in the lower gravity field will gain relative to that of the clock in the higher gravity field. It is hard to deny the relativity of time. One of the causalities inflicted by relativity of this type is the concept of sameness of time. Since each thing has its own time scale which varies with its location, motion, and so forth, there simply is no objective basis upon which sameness of time could be grounded.  

The relativity of time both helps and harms IU theory. One problem that IU theory faces is that IUs cannot exist uninstantiated. Since it is reasonable to believe that properties cease to be instantiated and properties become newly instantiated, the IU theorist faces a bit of a problem with his rejection of uninstantiated universals. Armstrong

---

notes that he must address the problem on the pain of admitting uninstantiated universals. Armstrong's solution to the problem is to accept a rather liberal Principle of Instantiation. On his view, a universal counts as being instantiated if it is instantiated at some time in the past, present or future. He admits that this view requires him to accept that past, present and future are equally real. 79 There are some argument that the relativity of time entails that the past present and future are equally real. Armstrong does not argue for this claim, but he can be granted, for the sake of argument, the reality of the past, present, and future and the avoidance of admitting uninstantiated universals. Unfortunately, the relativity of time is a two edged sword.

While relativity helps Armstrong avoid uninstantiated universals, it complicates matters a bit. If the theory of relativity is correct, and it has successfully withstand attack for 87 years, then there is no frame invariant sameness of time. In light of the relativity of time, what needs to be done is to make the account of what it is to be a universal slightly more complex. A universal can be defined as an entity that can wholly exist in many locations at the same time, where "same time" is defined relative to a frame of reference. More precisely, P is a universal iff P can be located at Locations L1, L2, etc., (where L1 ≠ L2, etc.) at T, where T is defined relative to frame F. The problem with this is as follows. Consider two objects a and b which each instantiate the universal F. Further suppose that b instantiates the universal S, which a does not. Imagine that a is on earth while b is loaded onto a Bussard Ramjet and fired off towards Alpha Centauri at a respectable percentage of the speed of light. According to the theory of relativity, the F which is instantiated by b will lag behind in time relative to universals that instantiated by objects on earth, such as the universal S. However, by hypothesis, F is also instantiated by an object on earth, namely a. From this it follows that if the theory of relativity is correct, then F will be lagging in time behind itself, which is an absurd result. Since the

theory of relativity has a far more solid foundation than IU theory, it would be reasonable to reject IU theory rather than the theory of relativity.

Of course, in the light of relativity, a modified account of what it is to be a particular needs to be provided. A particular is an entity that can only wholly exist in one place at one time, where the time is defined relative to a frame. More precisely, A is a particular iff A can only be located at location L1 at T, where T is defined relative to frame F. Particulars do not suffer the difficulty from relativity that IUs do, for obvious reasons. In light of this difficulty with the well established theory of relativity, it is reasonable for those who would accept properties to reject IUs and embrace tropes instead.

Multiple Location

As has been noted, the key feature of IUs is their ability to wholly exist at many locations at the same time. This ability is the ability to be multiply located. In contrast, spatial particulars are singularly located. Multiple location is rather odd. Normally, x being wholly present at y (a spatial-temporal location), implies that x is not wholly present at z (a spatial-temporal position distinct from y). So, to assert that x is wholly present at both y and z is to assert that x is wholly present at z and not wholly present at z and similarly for y. Since this results in a manifest contradiction, what it is for a universal to be wholly located at a position must be quite different from what it means for anything else to be wholly located. So, the IU theorist is obligated to provide an account of multiple location. Armstrong's account is as follows.

According to Armstrong, the world is a world of states of affairs, each of which is a thick particular. A thick particular consists of a thin particular and the universals it instantiates. An example of a state of affairs would be a being F, where a is a thin particular and F is a universal. A thin particular is a substratum, which Armstrong identifies with *the place a thing is said to occupy or, perhaps even better, the place and
time that it occupies. Properties, according to this suggestion, perhaps even spatial and
temporal properties (shape, size, duration), are supported by, inhere in, or qualify places
or place-times." 80 Concrete objects of everyday experience, like tables and chairs, would
be states of affairs (perhaps composed by many states of affairs). According to
Armstrong, the world is a conjunction of states of affairs and this view of the world forms
the basis of Armstrong's account of multiple location. Armstrong's entire account of
multiple location is as follows:

All that can be said here is that the space-time world would have to be an
enormous plurality or conjunction of states of affairs, with all the particulars
that feature in the state of affairs linked up together (in states of affairs) by
spatiotemporal relations.

To talk of locating universals in space-time then emerges as a crude way of
speaking. Space-time is not a box into which universals are put. Universals
are constituents of states of affairs. Space-time is a conjunction of states of
affairs. In that sense universals are "in" space-time. But they are in it as
helping to constitute it. 81

This account of multiple location is highly problematic. The problem is that the thin
particular is taken to be a place-time. As was noted above, Armstrong claims that space-
time is a conjunction of states of affairs and states of affairs are thin particulars plus
properties. But, thin particulars are place-times. Therefore, in order for there to be thin
particulars, there must be space time. However, a prerequisite for the existence of space-
time is the existence of thin particulars. As the passage lately quoted indicates,,
Armstrong's account has him trapped in a vicious circle. It must be concluded that
Armstrong has done nothing to make multiple location plausible. He does say that
multiple location may simply be accepted 82, but he is honest enough to say that
reconciling his account of multiple location with Naturalism and modern physics "would
be an enormous undertaking, presumably involving both fundamental science and

philosophy, to give an answer involving even the sketchiest detail. However in light of the problems that multiple location causes for IU theory and its great mystery, there don't seem to be any good reasons to simply accept multiple location and a promissory note that may never be paid does not count as an argument.

In light of the problems with multiple location, it seems prudent to reject IUs and accept properties that are singularly located, namely tropes. Since tropes are singularly located, reconciling the metaphysics of a trope theory with physics is far less problematic than reconciling IUs with relativity. Of course, it may turn out at some point that a completed physics may favor universals over tropes, but there is no reason to believe this at this point.

Resemblance

As was mentioned above, the IU theorist claims that his mechanism of identity gives his theory an important advantage over resemblance theories. Therefore it is important to determine whether this claim can be substantiated by the IU theorist or not.

As will be remembered, resemblance theorists are forced to take resemblance as a primitive, unanalyzed motion and are required to accept various axioms for the characteristics of resemblance that are utilized. These axioms are as follows First, resemblance is symmetrical. The IU theorist claims that the symmetry of resemblance rests on the symmetry of identity. For example, if \( a \) resembles \( b \), then \( a \) and \( b \) are identical in at least one respect. Second, exact resemblance is transitive. The IU theorist claims that the transitivity of exact resemblance is, in fact, the transitivity of identity. If \( a \) resembles \( b \) and \( b \) exactly resemble one another, then this is because they share the same, identical properties. Less than exact resemblance is, of course, not transitive. The IU theorist will claim that, for example, if \( a \) resembles \( b \) to degree \( D \) (where \( D \) is less than exact resemblance) and \( b \) resembles \( c \) to degree \( D \), it cannot be inferred that \( a \) resembles \( c \) to

---

degree D, since the resemblances between \( a \) and \( b \) and \( c \) can be based on different properties. Since the resemblance theorist must take as primitive what the IU theorist can dispense with through analysis, this is an advantage for the IU theory. 84

Fortunately, this attack can be countered. Consider the universals themselves. It seems reasonable to claim that different universals resemble one another. For example, all universals resemble one another in respect to being universals and the universal red would resemble the universal orange more than it would resemble the universal green. Hence, the IU theorist must admit resemblance as a primitive that holds between properties, which leaves him with no advantage here over the resemblance theorists. What the IU theorist needs to claim is that resemblance between universals is a matter of identity between universals. So, only complex universals (universals composed of universals) actually resemble one another and they do so in virtue of varying numbers of identical constituents. In order to defend this claim, the IU theorist must argue that there are no irreducible resemblances between universals. 85

The existence of an irreducible resemblance between universals can be argued for as follows. The initial premise is the universal theorists claim that any case of resemblance reduces to a case of partial identity. Now, consider any two universals. They both resemble each other in being universals. The universal theorist needs to be able to account for the fact that all token universals belong to the type universal. There seem to be two possible answers to this question. One answer to claim that the particular universals are all universals in virtue of the fact that they all resemble one another and this resemblance does not reduce to any form of partial identity. What universals have in common is that they are universals. The trope theorist gives an analogous answer to the question of what it is for token tropes to be of the type trope. The answer is that they all

---

resemble one another and what tropes have in common is that they are tropes. The second option is to simply refuse to offer an account of why all token universals are of the type universal. Given the universal theorist's philosophical program, this seems ad hoc. The third option is to offer a reductive analysis of resemblance between universals by offering an analysis of what it is for the token universals to be of the type universal. On the universal theorist's analysis, this would mean that universals have as a constituent the universal of *being a universal*. This is problematic for two reasons. First, being a universal certainly doesn't seem to be a universal and it would be rather odd to make such a claim. Second, if being a universal is itself a universal, then it would be logically required to instantiate itself. Unfortunately, this cannot occur since the universal of being a universal instantiating itself logically presupposes that it is instantiating itself. Hence, it would have to be concluded that if *being a universal* is a universal, then there are no universals. In light of these results, it would be better to accept that there is at least one case in which resemblance cannot be analyzed in terms of partial identity. Hence, the universal theorist cannot complete his analysis of resemblance and it remains a primitive. Therefore, the universal theorist can no longer claim an advantage of theoretical economy over the trope theorist for it seems they must both accept resemblance as a primitive.

In light of these results, it would be reasonable for the universal theorist to accept that token universals are of the type universal because they resemble one another. Doing so would not put the universal theorist at a disadvantage relative to the trope theorist, since both theorists needs to take resemblance as primitive. However, this does deny the universal theorist the opportunity to do without a primitive notion of resemblance. Hence, the universal theorist can claim no advantage over the trope theorist here.

*Conclusion*

The IU theory has to its advantage an initial consistency with naturalism, the use of identity as a grouping mechanism, and the advantage of accepting properties. However
IU theory suffers from serious difficulties. First, there is the instantiation regress, second there is the problem with relativity, and third there is the problem with multiple location. These problems stem from the postulated nature of immanent universals and not from the acceptance of properties, per se. Finally, the mechanism of identity was found to be no substitute for the mechanism of resemblance, since the IU theorist cannot complete his analysis of resemblance in terms of identity. In light of these results, it is still reasonable to accept properties, but properties as particulars. In other words, it is reasonable to accept tropes.

At this point, the difficulties of class nominalism and resemblance nominalism provide motivations to accept properties and the difficulties with TU theory and IU theory stem from taking properties to be transcendent entities and from taking properties to be entities capable of being multiply located, respectively. So, it is at least initially reasonable to accept properties as particulars.
3.1 Introduction

In chapter one the problem of universals was discussed and the legitimacy and importance of the problem was defended. Chapter two provided critical assessments of various proposed solutions to the problem of universals. The master argument, so to speak, of the past two chapters is as follows. The two initial premises of the argument are that the problem of universals is a legitimate problem and that the competition class that has been presented is exhaustive, such that it contains all plausible solutions to the problem of universals. The third premise is that these proposed solutions are mutually exclusive in a way that only one of them can be correct. From the discussion in chapter two, it should be clear why these theories are mutually exclusive. Since the competition class is exhaustive and mutually exclusive, if it can be shown that all but one of the proposed solutions should be rejected, then that remaining theory is the most plausible solution to the problem. The competition class considered contained family resemblance, two nominalist theories, Lewis' possible worlds class nominalism, two universal

---

86 That this is the case was argued in chapter one.

87 Chapter two excluded predicate nominalism, concept nominalism and mereological nominalism. While these theories have been proposed as solutions to the problem of universals, they are not plausible proposals. For decisive criticisms of such views see D.M. Armstrong, *Universals and Scientific Realism Volume I*, Cambridge: Cambridge University Press, 1983.

88 For example, immanent universalism and trope theory cannot both be correct, since the universal theorist asserts that all properties are universals while the trope theorist claims that all properties are particular. Both theories are in direct competition with resemblance and class nominalism since these theories deny the existence of properties as metaphysical entities.

89 Not in the respect that it includes every proposed theory, but in the respect that it includes the most plausible of the current proposed solutions.
theories, and trope theory. In chapter one and two it was shown that family resemblance, the two varieties of nominalism examined, and the two varieties of universal theory examined all suffered from serious defects and limitations. In contrast, trope theory was able to solve the problems that the other theories were not able to handle. Thus, trope theory is the most plausible solution to the problem of universals.\(^\text{90}\)

While trope theory has been determined to be the most plausible solution to the problem of universals, there is still the question of exactly what sort of trope theory should be accepted. There are four main problems that every trope theory faces and there are a variety of initially plausible solutions to each problem. Because of this, trope theories are distinguished from one another on the basis of differences in the solutions offered to these four problems. The first is the problem of individuation of substances. Solving this problem involves determining what a single substance is and how substances are differentiated from one another. There are two approaches to this view. One option is to argue for a trope-binding substrata which serves to individuate substances, as C.B. Martin does.\(^\text{91}\) The second option is to accept a bundle view and find some other way to individuate substances (which would be bundles of tropes). A form of this view is accepted by Keith Campbell.\(^\text{92}\) Campbell makes use of space-time in his solution to this problem, but as will be seen below, he takes space-time to be a trope. Thus, one competition that must be settled is the competition between individuating substrata views and bundle views.

\(^{90}\)It must be said that it is the most plausible theory in the competition class. If and when new theories are proposed, trope theory will have to compete with them. However, there is an additional reasons to accept trope theory at this point. The ways in which the various competitors to trope theory failed serve to support the acceptance of trope theory. For example, the two versions of nominalism considered failed because the theories did not include properties (as metaphysical entities) which provides support for the claim that properties should be accepted. The failure of transcendant universalism made the need to accept immanent properties clear and the failure of immanent universalism made the need to accept properties as particulars clear. Thus, the failings of the other theories indicates that a plausible solution to the problem of universals will require the acceptance of immanent, particular properties.


The second is the boundary problem. In the context of tropes, this involves
determining where and when one trope ends and another begins. There are two
approaches to this problem. Campbell, as will be shown below, solves the boundary
problem by taking tropes to be space-time spanning entities. The other approach is to
accept more restricted tropes. In the case of substances, the problem is determining where
and when one substance ends and another begins. Since on both the bundle and substrata
views substances are groups of tropes, at least part of boundary problem of substances
will be solved when the boundary conditions of tropes are worked out. Those who accept
substrata will, of course, need to work out boundary conditions for substrata in order to
determine the boundary conditions of substances.

The third is the problem of order. This problem involves determining what, if
anything, serves to order and organize tropes into complex entities. There are two main
approaches to this problem. The first is to accept a non-trope entity in order to solve the
problem. This can be (but need not be) an individuating substrata. In this case substrata
would have a dual role to play in the theory. It is also possible to make use of space-time
realism in addressing this problem. The second option is to forgo accepting an ordering
entity and provide some other account of order.

The final problem is determining the nature of tropes. While a neutral characterization
of tropes will be given below, there is serious dispute over the specific nature of tropes.
Campbell argues for space-time spanning variegated tropes. The main alternative to this
view is to accept tropes of a more restricted an unvariegated nature.

The view that will be defended in this chapter is that the following solutions to the
four problems are the most plausible. First, a bundle of tropes view is superior to a
substratrum view in solving the problem of the individuation of substances. Second, tropes
are restricted and the boundaries of tropes set the boundaries of the substances (bundles)
they constitute. Third, the problem of order will be solved in the context of (non-trope)
space-time realism. Fourth, it will be argued that tropes are restricted and unvariegated.

The general method of this chapter is to consider each plausible solution to each problem and to select the least problematic and most beneficial solution in each case. Before this method can be employed, in order to set the stage for the discussion of tropes, substances, and substrata will be discussed.

3.2 Tropes, Substances, and Substrata

This section contains detailed discussions of tropes, substances, and substrata. In this section, the characterization of tropes will be kept as neutral as possible. This will be done to provide a general description of what tropes are without begging the question in favor of Campbell or the view argued for in this work. The characterization of substances and substrata will also be put forth in as neutral a manner as possible within the context of general trope theory.

Tropes

Consider a sack of six marbles. Imagine that these marbles are all of the same exact shade of blue and are of the same spherical shape, although each marble differs from the others in size. Assume, probably incorrectly, that color is a property of objects. In this case color appears both as a type, namely the shade of blue all the marbles have, and a token, namely the particular instance of the shade of blue which is had uniquely by each marble. There are also six tokens of the spherical shape type present, assuming that shape is a property of objects, but only one instance of each particular size, since each marble has a different size than any other.

In order to understand what tropes are, it is best to consider an immanent universal theorist's analysis of the above example and contrast it with a trope-theorist's analysis of the same situation. An immanent universal as was noted back in chapters one and two, is a property that can be wholly located at many different locations on the same dimension.

---

93This example is based on Keith Campbell's example. For Keith Campbell's initial characterization of tropes, see Keith Campbell, Abstract Particulars, Cambridge: Basil Blackwell, 1990, pp. 2-4.
at the same time. An immanent universal theorist would offer the following analysis of
the above situation: there are six particulars present in the sack, namely the six marbles.
There are, in the context of the example, eight different universals present and a total of
eighteen instances of those universals: six instances of the universal blue, six instances of
the universal of having a spherical shape and one instance of each different size present.
In terms of the problem of sameness, a marble is blue when it instantiates the universal
blue and two marbles are both blue when they each instantiate the universal blue. They
are both tokens of the same type in virtue of having an identical constituent.

According to the trope theorist, tropes are, like universals, properties. Unlike
universals, tropes are limited to occupying at most one location on each dimension at a
time. Thus, the trope theorist would offer the following analysis of the situation: there are
twenty four particulars in the sack. Six of the particulars are objects, namely the marbles.
Eighteen of the particulars are tropes: six exactly resembling, but non-identical blue
tropes, six exactly resembling, but non-identical shape tropes, and six different, but
resembling shape tropes. In terms of the problem of sameness, a marble is blue when it
has a blue trope. Two marbles _a_ and _b_ are blue when _a_ has trope _B_ and _b_ has trope _C_ and
_B_ and _C_ are both blue tropes. Trope _A_ is blue in virtue of what it is, and the same for
trope _B_. _A_ and _B_ both blue tropes in virtue of the resemblance that holds between them.

Thus, where an immanent universal theorist postulates a universal, the trope theorist
postulates a trope. Where the immanent universal theorist uses the mechanism of identity
to group tokens into types, the trope theorist uses the mechanism of resemblance. Both
views are realist views about properties, but, as noted in chapters one and two, they are in
dispute over whether properties are particulars or universals. Thus, put simple, tropes are
properties which can be located at most on a single place on each dimension at the same
time.
It is not entirely uncontroversial, but it is reasonable to claim that things act and are acted upon in virtue of their properties. Some examples from everyday life are as follows: a car resists being pushed by a person in virtue of its mass, a bowling ball rolls in virtue of its shape, humans see objects in virtue of reflections of light, and a fire burns one's hand in virtue of its heat. Though imprecise, these accounts seem to get things basically right. Without a round shape, a bowling ball would not roll properly. If fire were not hot, it would not burn things. In support of this claim, Armstrong argues:

...the active and passive causal powers of particulars are determined by the properties of the particulars. This follows from the not quite uncontroversial, but surely plausible claim that causal connections, whatever else they involve, involve law-like connections...For a law like connection is a connection subject to a general rule, and so must depend upon the general nature, that is, the properties, of the particulars subject to the rule. Hence, the causal powers of particulars are determined by their properties.  

If this argument is successful, and it does seem at least reasonable to accept, then properties should be taken to be active and passive causal powers. Since properties are tropes, it seems reasonable to take tropes to be active and passive causal powers.

It may be the case that accepting the accompanying law like causal connections is too controversial and problematic. If this is the case, then a weaker account of properties can be given, following Plato's Eleatic Stranger:

I suggest that anything has real being that is so constituted as to possess any sort of power either to affect anything else or to be affected, in however small a degree, by the most insignificant agent, though it be only once. I am proposing as a mark to distinguish real things that they are nothing but power.  

On such an account, properties would simply be powers that affect or are affected by other powers, whatever affecting may be. Thus, there would be no property that is not a power. This view seems to be both reasonable and fairly neutral. It is reasonable to accept in that to claim that X exists, but can never affect or be affected by anything, would be an


odd sort of claim to make. After all, what sort of thing would X be? It is also reasonable to accept that things affect and are affected by one another in virtue of their properties. After all, as noted above, bowling balls dropped on people's feet certainly seem to affect the feet because of the mass and weight the balls have and the capacity to be broken that feet bones have. This view is fairly neutral in the sense it leaves open what it is to affect or be affected. For example it may be possible to put forth a non law-like account of being affected by and affecting.

Because of the difficulty of putting forth an account of causation and the fact that doing so would go far beyond the scope of this work, tropes are taken to be entities in virtue of which entities affect and are affected by one another, whatever this affecting and being affected may turn out to be.

While Plato's mark of being is reasonable, there are cases in which philosophers wish to accept properties which are clearly non-causal or can not affect or be affected by other properties. An example of a clear non-causal relation is Lewis' relation of accessibility which crosses between possible worlds. This relation is non-causal, primarily because Lewis' possible worlds are, by hypothesis, causally isolated from one another. If mathematical realism is correct, then it would seem that there are many non-causal properties that mathematical objects possess. One way to respond to such proposals is to reject such entities because they fail to meet Plato's Mark of Being. This sort of position is explicitly taken by David Armstrong. This view has a strong appeal to it, stemming from the intuitive appeal of the mark of being and the ontological economy it yields. However, given the methodology adopted in this work, it is a position that cannot be accepted.

---

The position that is accepted in this work is that while such proposals should be greeted with suspicion, the account of properties can be expanded to include them should there be good reason to do so. This is because the methodology adopted in this work is one of weighing costs and benefits. Should it turn out that there are benefits to be had by accepting such "properties" and it can be shown that the costs are worth these benefits, then such "properties" should be admitted as tropes along with the less controversial sorts of tropes. However, the burden of proof rests on those who postulate such "properties." Not only must they provide good reasons to accept such "properties", they must also provide good reasons to accept that the "properties" they postulate are properties and not some entirely new sort of entity. As long as these conditions can be met, it would be possible to expand the account of properties to include such non-causal, non-affecting and non-affectable entities. While the question of what such new sorts of properties might be goes beyond the scope of the present concern of this endeavor, and such work is left to those who are concerned with such matters, it is appropriate to provide an example of what such properties might be and how they might be argued for.

Mathematical realists, of the sort described by Lewis\(^9\), accept mathematical entities which have non-causal, mathematical attributes. For example, imagine a mathematical object \(a\) which has attributes \(A\), \(B\), and \(C\). Imagine that it is in virtue of these attributes that mathematical object \(a\) is \(F\) (a perfect triangle or a rational number, for example). If this is the case, it seems reasonable to take \(A\), \(B\), and \(C\) to be properties. This is because they give \(a\) the qualities it has and this is a traditional role for properties, even if those qualities are non-causal in nature. Thus, there could be good reasons to accept mathematical tropes. However, this view is neither endorsed nor rejected at this time.

A final issue to be addressed is whether tropes are simple or complex metaphysical entities. A simple metaphysical entity has no constituent entities which serve to constitute

it, while complex entities have such constituents. Simple entities are metaphysically basic since they are subject to no further reduction or analysis. The claim that is to be defended is that tropes are metaphysically simple.

Consider a property P. P is either metaphysically simple or metaphysically complex. If P is simple, then there is no need to argue further for the simplicity of properties. If P is complex, then P has constituents in virtue of which P is P. In this case, P has constituents in virtue of which P is P, and hence these constituents are properties. Thus, P is not a single property but group of many properties. Each of the constituent properties are either simple or complex. If they are simple, then properties are simple. If they are complex, then these properties have constituents in virtue of which they are what they are. Since these constituents are properties, then they are either simple and complex. And so on, into infinity.

The most plausible way of stopping the regress is to take properties to be simple in the sense that they have no constituents. Since properties are tropes on the view being defended, it is reasonable to accept that tropes are simple in this respect. Thus each trope is a simple property.

It can be argued that this method of stopping the regress is unprincipled, because properties cannot be simple given the sort of analysis put forth by all property accepting views. One part of the problem of sameness is the problem of determining what it is for a single a to be F, where F is a property. It would seem that any property acceptor is committed to analyzing what it is for a property to be F in terms of that property having the property F. Such an analysis will either result in an infinite regress or circularity. The regress arises because if a being F is analyzed in terms of a having a property F, then

---

what it is to be F must be analyzed. Since F is a property, its being F would have to be
analyzed in terms of it having a property, and so on into infinity. If it were claimed that a
is F because a is F, then the property acceptor is open to the charge of circularity.

In order to respond to this, the property acceptor simply needs to be clear about what
he is required to analyze in terms of something having a property. The sort of a is F cases
that the property acceptor is required to analyze in terms of something having a property
are cases in which the 'is' is the 'is' of predication. What the property acceptor need not
analyze are a is F cases in which the 'is' is the 'is' of identity, for such cases are not cases
of a having a property, but of a being a property. Having a property and being a property
are two distinct matters and the same analysis should obviously not be expected to
apply in both cases.

Trope theory avoids the regress charge in the following manner. Where 'is' is the 'is'
of predication, a is F if a has an F trope as a constituent. Where 'is' is the 'is' of identity, a
is F where iff a = F. The regress problem is avoided because what it is to be a property is
not the same thing as what it is to have a property. Since the regress only arises on an
equivocation between the 'is' of predication and the 'is' of identity, the regress is defective.
Further, trope theory avoids the regress because the trope theorist is not obligated to
analyze what it is to be a property in terms of what it is to have a property.

Trope theory avoids the circularity charge in the following manner. The circularity
charge arises only if the trope theorist is required to give a reductive analysis of what it is
for a property a to be F in terms of a having a property F. Obviously, analyzing a is F as
a is F would be circular in this context. However, the trope theorist is not committed to
offering, nor does he purport to offer a reductive analysis of what it is to be a property in
terms of having properties, so the circularity charge must be dropped. Of course, the price
paid in avoiding these problems is leaving what it is for a trope to be what it is

---

101 That this is the case is supported by intuitive uses of 'having' and 'being.' For example, having the flu is
a matter quite different from being the flu.
unanalyzed, which does raise the cost of the theory. However, as is argued latter in this chapter, this is not a special problem for trope theory. Thus, it seems perfectly reasonable to accept the metaphysical simplicity of tropes.

Substances

According to Descartes, a substance is "a thing which exists in such a way as to depend on no other thing for its existence." Those familiar with the history of philosophy will be well aware that the term 'substance' has been used in many different ways. Some of the alternative uses are as follows. First, the term can be taken to mean the "real essence" of the thing in question. Second, the term can be taken to refer to that which supports properties. Third, the term can be taken in the sense in which substances are a "things most fundamental or categorical properties." There are also other uses of 'substance' that have not been included here. Whatever the merits of these other uses of 'substance', the term will not be used in this work in any of those ways. This is not because of any inherent superiority in the Cartesian definition over the alternatives, but because a short and handy term is needed to refer to entities which do not depend on other entities for their existence. 'Substance' is as convenient a term as any and enjoys a fair degree of acceptance in its use in this manner. Fortunately, it is not essential which term gets defined which way, as long as each term has a distinct definition that will aid in clarity and the avoidance of confusion and misunderstanding.

As has been noted, a substance is an entity whose existence depends on no other entities. This definition captures the notion of substance which is in use here, but certain complexities must be considered in discussing the nature of substances. As has

---

104 Dependence can be expressed in modal terms. If x is dependent on y, then it is not possible for x to exist when y does not (y's existence is necessary for x's existence). This may be expressed logically as follows: the claim that it is not possible for x to exist without y is true at w (a particular world) iff there is no world u in W (the non-empty set of possible worlds) such that x exists and y does not in u. Talk of these worlds is talk of a model, I should not be construed as being committed to possible worlds realism.
been noted, substances are entities capable of independent existence, but what independent existence amounts to depends on the dependence hierarchy of the world. The dependence hierarchy is simply the various relations of metaphysical dependence that hold between the various entities. In this context, a general definition of 'substance' would be:

\[ x \text{ is an n-ary substance iff } x\text{'s existence is independent of all other n-level entities.} \]

An entity that depended on no other entities at all would be a prime substance. For example, suppose that spatial-temporal entities can exist independently of one another but are dependent on space-time, such that there could be one such entity in space-time and no others. Suppose further that space-times cannot exist without God, but they can exist independently of one another. Suppose that God requires nothing else to exist. In such a situation, God would be the prime substance (since His existence does not depend on the existence of any other entities), space-time a secondary substance, and spatial temporal entities would be tertiary substances. Suppose that properties and substrata cannot exist independently of one another. Since they are at the same ontological level, they would not be substances.

In the context of trope theory, one of the main issues is the relation between tropes and substances. A bundle theorist who accepted substances would be inclined to accept that any bundle of tropes that could exist independently of all other trope bundles would constitute a substance. Of course, if tropes could exist independently of one another, then such tropes would be substances. A trope-substratum theorist who accepted substances would accept any group of tropes bound by a substratum capable of existing apart of

\[^{105}\text{Independent existence may be expressed in modal terms. If } x \text{ is independent of } y, \text{ then it is possible for } x \text{ to exist when } y \text{ does not. In such cases, } y \text{ is not necessary for } x. \text{ The nature of this possibility can be logical. For example, Hume's definition of "substance" is that which is logically capable of independent existence. The claim that it is possible for } x \text{ to exist without } y \text{ is true at } w \text{ iff there is some } W \text{ such that } x \text{ exists and } y \text{ does not.} \]
other such groupings as a substance. Because both the bundle theorist and the trope-substratum theorist can accept substances with tropes as constituents, the important debate between the two is whether or not such substances are composed solely of tropes. As has been noted, the trope-substratum theorist will claim that substances include at least two types of entities, namely tropes and substrata.

It seems reasonable to accept that substances are at least groups of tropes, because the claim that each trope is a substance is an implausible claim. It is particularly clear that relational tropes, if there are any, should not be accepted as substances. It is rather difficult to accept that a relation could exist without any related entities. If tropes are substances, then any single trope could exist independently of all other tropes. So, for example, if there are individual mass and charge tropes, then there could be a world which contains a single mass trope, M. It would also have to be possible for a shape trope to exist on its own, a size trope to exist on its own, and a pitch trope to exist on its own. Since these claims are implausible, it would seem that single tropes will not do as substances. Hence, a substance will have to consist of at least multiple tropes. Of course, it remains to be seen whether a substance is best taken to be a bundle of tropes or tropes and a substratum.

Substrata and the Two Problems

A substratum, in the context of trope theory, is an entity which is postulated to solve two important problems. These two problems are the problem of individuation of substances and the problem of order. The problem of individuation of substances is the problem of determining what, if anything, serves to differentiate two substances. Solving this problem, as will be made clear below, involves solving the problems of differentiation and the boundary problem. The corresponding question is, where A and B are substances, what is it for A and B to be two, distinct entities? To answer this question
fully requires an account of what it is for \( A \) to be \( A \) and what it is for \( A \) to not be \( B \) and an account of what it is to be one substance.

Briefly, there are two main options here. One is to adopt an individuating entity that is not a trope. The trope-substrata theorist's answer to the question last posed is that \( A \) and \( B \) are distinct substances when \( A \) has as its substratum \( a \) and \( B \) has as its substratum \( b \) and \( a \neq b \). On this view, substrata are non trope entities that serve to individuate substances. The bundle theorist also needs to account for the individuation of substances. In the bundle theorist's case, she needs to individuate her bundles from one another. The ways in which this might be done will be considered below. The bundle theorist is distinguished from the trope-substratum theorist in that she does not postulate a further ontological kind to solve this problem.

The second main problem is the problem of order. This problem involves determining what, if anything, serves to order and organize tropes into complex entities. The corresponding question, where \( A \) and \( B \) are two groups of tropes that exactly resemble each other, but where \( A \) and \( B \) are ordered differently, is what is it for \( A \) to be ordered differently than \( B \)? To clarify what is meant in this context, an ordering is an arrangement of tropes in a certain manner. The clearest and simplest example of the arrangement of tropes is in the case of higher order properties.\(^{106}\) Suppose that there is a group of tropes consisting of tropes \( A, B, C, \) and \( D \) and that \( P \) is a higher order property trope. Suppose that in case one \( A \) has \( P \) as a property and in case two \( B \) has \( P \) as a property. Both cases involve the exact same tropes, but the cases are different and what is different is the arrangement of these properties.

There are two approaches to this problem. One is to postulate a non-trope entity which serves to solve the problem. This entity could be taken to be the same substrata that individuates substances or it could be taken to be a different sort of entity, or, as is

\(^{106}\)A higher order property is a property of a property. This topic is discussed at some length in chapter four.
argued below, a theorist who takes a bundle solution to the problem of individuation can accept a non-trope entity in order to solve the problem of order. The second approach to this problem is to provide an account of ordering without accepting another entity.

Any adequate solution to the problem of order will require a real orderer. This claim is supported by an argument inspired by David Lewis' argument against structural universals. This argument is as follows: Suppose, for the sake of argument, that there are hydrogen and carbon tropes. Butane and iso-butane contain exactly the same constituents: ten hydrogens and four carbons. However, they are quite distinct sorts of molecules. The relevant difference between any molecule of butane and any molecule of iso-butane is the arrangement of their constituents. Therefore, it cannot be the case that there mere existence of the carbon and hydrogen tropes accounts for the distinction between butane and iso-butane. Hence, it can be concluded that there is a need for a real organizer, if there are cases in which the organization of the constituents makes a difference. Since there are such cases, it follows that there is a need for a real organizer. The difficulty is, of course, determining what this real organizer might be.

3.3 Problems with Individuating Substrata

As noted above, there are two main approaches to the problem of individuation of substances. One option is to accept individuating substrata and the other is to accept a bundle view and work out an account of individuation without substrata. In this section, the advantages of accepting substrata will be examined, followed by a fairly detailed examination of the difficulties substrata face.

Those who accept individuating substrata solve the problem of the individuation of substances in the following manner: a is one substance iff a is a group of tropes that are bound to a substratum s and for b to be one substance is for b a group of tropes that are bound to a substratum c. For a to be a different substance than b is for s ≠ c. This

provides a clear account of the individuation of substances and hence seems to provide a reasonable solution the problem of the individuation of substances.

The trope-substrata view also matches the subject-predicate structure of English and many other natural languages, which can provide a motivation to accept substrata. Such languages seem to express a property-property bearer ontology. In the case of many artificial languages, the apparent expression of a property - substrata ontology is far more pronounced. For example, a formula like Fa certainly seems to correspond to a property (F) and a substratum (a). While the move from facts about the structure of language to facts about the metaphysical structure of reality is not one that should be lightly made, as Campbell says, "it offends credibility to suppose that the structure of the world we live in has no bearing on the fact that our language has the dualistic structure it does."108 Thus, one reason to accept substrata is what might be called the argument from the structure of language.

A second reason to accept substrata is the fact that while human beings encounter objects with many properties, they do not encounter single properties existing on their own. For example, while human beings encounter stones with masses, shapes, sizes and colors, there are no reports of humans encountering a mass on its own, or a color on its own, or a size on its own. Because of this, it seems reasonable to accept that properties are not the sorts of things that can exist on their own, but that they must inhere in or be bound by an individuating substrata. There are these reasons to accept substrata. However, there are reasons to reject substrata, namely the many serious difficulties they face. It is contended that the reasons to reject substrata far outweigh the reasons to accept them.

The empiricist tradition includes a stock argument against substrata. This argument was first presented by John Locke and similar arguments were used by George Berkeley against material substance and by David Hume against both material and immaterial substances. In each of these cases, the term "substance" was used to refer to what the term 'substrata' is generally taken to refer to, since they were attacking that which they took to be the supporter of properties and what is taken in this work to be the binder of tropes. Their argument can be presented in the following, generalized form: Whatever is known about things is known in terms of, or by means of, their properties. Since substrata are supposed to be the binders of properties and not properties themselves, they cannot be known. Since they cannot be known, to posit the existence of substrata is to engage in unjustified speculation, and hence should not be done.

A related argument with a milder conclusion is as follows: Properties are, for the most part, well and clearly understood and are experienced everyday. In stark contrast, that which is supposed to bind these properties is neither clearly nor well understood and they never seem to be experienced. They are, it must be concluded, mysterious sorts of entities ("unintelligible chimeras", as Hume would put it). Hence, it is concluded that the mysteriousness of substrata provides a reason to reject them and at least raises the cost of accepting them.

It can be argued that just as a theoretical physicist infers the existence of basic particles from the observable results in a gas chamber or magnetic field, even though the

---

112 I use the term "bind" since I prefer the metaphor to the support metaphor. The distinction between supporting and binding need not be of concern here.
particle itself is never observed, the existence of substrata can be inferred from the existence of a world that is not just a loose and chaotic jumble of tropes. After all, while humans do encounter things like stones with masses, colors, and densities, they have yet to encounter a mass, a color, or a density existing independently. The problem with this response is that in the case of particles the inference is a causal one. Since substrata are not causally efficacious, the inference cannot be a causal one. Thus, those who accept substrata must find some way to warrant their claim that substrata exist.

The most promising way to justify the claim that substrata exist is to argue that accepting them has important philosophic advantages. If this claim can be supported, then it would be reasonable, given the sort of methodology follows in this work, to accept substrata even in the face of the empiricist's epistemic challenge. In the remaining sections it will be determined whether or not the defects of substrata are too serious to warrant their acceptance or not.

**Bare Substrata and Individuality**

The problem of bare particulars, or bare substrata, has long been a problem in philosophy. The difficulties that bare substrata face generally arise from the fact that they are taken to be of an ontologically distinct kind from the properties they serve to support, bind, etc.

A traditional problem that has been presented against substrata is that either substrata are without properties of their own or they have properties of their own. If they do not have such properties, then they are bare and face two serious difficulties. First, there are no qualitative differences between bare substrata. Hence, if more than one substratum is accepted, then an account must be provided as to how there are many such utterly indistinguishable substrata. This is the sub-problem of individuating substrata. The

---

question here is: what if, anything, serves to individuate two substrata? It obviously cannot be a trope, for substrata were postulated to individuate groups of tropes. If the individuation of substrata is primitive, why not simply take the individuation of bundles as primitive and avoid the additional cost of accepting substrata. If the individuator of substrata is a third type of entity, then the question arises as to what individuates that entity. If the individuation of that entity is a primitive, why not just accept that the individuation of bundles of tropes is primitive and avoid the ontological cost? If that entity is individuated by yet another entity, the same problems arise again. Second, bare substrata would, prima facie, lack the capacity to bind properties. However, if substrata lacked this capacity, they could not do the work they were postulated to do and hence their acceptance would increase the cost of the theory without yielding any benefits. Thus, it would be unreasonable to accept bare substrata.

If substrata do have properties of their own, then the following problem arises: a substratum would still be bare under its properties, since tropes and substrata are ontologically distinct kinds. Since this simply leads back to the first problem, this is not a viable option. Given these problems, it seems unreasonable to accept substrata.

**Destruction**

In *Abstract Particulars*, Keith Campbell presents the following argument against the existence of substrata:

All causal action is exerted by way of the properties of things and all effects are effects on the properties of things. The substratum, precisely because it is without properties, including passive powers, ought to be totally immune to all causal activity. A fortiori, it ought to be unscathed by every destructive process. Yet if we introduce metaphysically indestructible substrata, we are undertaking a priori natural philosophy of a most discreditable kind. What items can you produce or postulate, belonging to the natural order, that are necessarily immune from destructive alteration?\(^{114}\)

This argument does pose a problem for those who would accept substrata, which increases the price of accepting a substrata view.

*Space-Time & Substrata*

Keith Campbell presents the following objection against substrata in *Abstract Particulars*:

Fourth, one final piece of unfinished business for substance theory is the relation of substances to space. Are the substrata of spatial objects themselves spatial? If so, then they do have spatial characteristics and in that case are not genuinely bare. But the whole rationale of the substance/property ontology is to distinguish that which furnishes particularity (substance) from that which provides the nature (property). Yet here the duality is being confused by crediting the substance qua substratum with at least enough relational properties to furnish location and different locations for different substrata.

On the other hand, if the substrata of spatial objects are not spatial, we are being asked to believe that at least one, and in all likelihood many, utterly mysterious, extra-spatial items are required in order for this quotidian chair on which I sit to be a thing at all. This leaves us completely in the dark as to how the non-spatial substratum links with this chair rather than some other. When the substratum links to one chair rather than another, it takes on spatial properties, and thereby it becomes spatial. But how can what is inherently extra-spatial take on a spatial character? \(^{115}\)

This is yet another problem for the already problem laden substrata. Given these problems, it seems unreasonable to accept substrata. Thus, the reasonable alternative seems to be a bundle approach to the problem of the individuation of substances.

3.4 Bundle Theories and Compresence

It was argued earlier in this chapter that single tropes are not suitable candidates for substances. The general argument is that single mass tropes, single hue tropes, and single pitch tropes are simply not the sorts of entities that could exist independently of all other entities. After all, could there really be a world which contained a single mass trope, or a single pitch trope? It certainly seems not. Hence, a substance has to be more complex than a single trope.

---

In addition to being complex, a substance has to be a single, unified group of tropes. It would not do to simply take a collection of tropes to be a substance. After all, if tropes are not the sort of entities that can exist singly, then they also cannot exist singly in mere collections. Rather, the tropes need to be related in a manner that makes them one substance. This relation has to connect the tropes together in a manner in which they serve to form a single complex entity which is capable of existing on its own, independently and apart from all other such substances.

While substrata have been postulated to fill the role of the unifiers of substances, careful considerations of substrata revealed them to be highly problematic. However, there is still a need to find a basis for the individuations of substances. Since the main alternative to a substratum view is a bundle view, it should be concluded that a bundle view is the most plausible theory, provided it does not suffer from fatal difficulties.

A trope-bundle view has two initial advantages over a trope-substrata view. The first advantage is that the view has a greater ontological economy. While the trope-substrata theory involves two distinct ontological kinds (tropes and substrata), the bundle theory only involves one ontological kind. The second advantage is that the bundle theorist easily avoids the traditional difficulties that have plagued substrata. This is because the problems stem from the substrata and not the tropes, hence the problems are specific to trope-substrata views, not trope views in general.

While bundle view has these two advantages, bundle theory still has to provide an account of the relations between tropes which connect them together to form discrete substances. This relation must be able to do two things. First, it must connect tropes together in such a manner that a group of tropes so connected can exist independently of all other such groupings. Second, the relation must serve to connect tropes in such a manner so as to form discrete substances.

116 The difficulties that are relevant to a trope-substratum view were considered above.
The relation that bundle theorists postulate to connect tropes to form single substances is the fundamental relation of compresence. According to the bundle theorist, for two bundles of tropes, a and b, to be distinct is for the tropes that compose a to be compresent with one another but to fail to be compresent with the tropes of bundle b. For example, if tropes A and B are compresent and tropes C and D are compresent, but tropes A, B, C, and D are not compresent, then A and B form one bundle and C and D form another bundle. Thus complex entities are individuated by the compresence relations that hold among tropes. Of course, more needs to be said about compresence.

Compresence is generally described as a relation that holds between any two tropes that are tropes of the same complex entity. Compresence is typically defined in terms of space-time\textsuperscript{117}, such that for two tropes to be compresent is for them to occupy the same place at the same time.\textsuperscript{118} In more precise terms, for any two tropes, A and B, to be compresent, is for A and B to occupy place S at time T. Expressed in these terms, it is clear that compresence is a symmetrical relation, so that if trope A is compresent with trope B, then B is compresent with A. After all, if A occupies the same place at the same time as B, then B occupies the same place at the same time as A. The relation of compresence is also transitive. If trope A occupies the same place at the same time as B and B occupies the same place at the same time as C, then A occupies the same place at the same time as C. The compresence relation is also reflexive. If A is at the same time and place as B, then because being at the same place at the same time is symmetrical, then B is at the same place at the same time as A. Since being at the same place at the same time is transitive, A is at the same place and the same time as A. Since the relation

\textsuperscript{117}So that this definition does not beg the question against there being non-spatial entities, it could be reformulated with 'occupy the same place on a dimension' in place of 'occupy the same place'. For the sake of simplicity, only the spatial and temporal dimensions will be considered, but the arguments and positions could be restricted to make them more general.

of compresence is, like resemblance, a symmetrical, transitive, and reflexive relationship
tropes that are compresent with one another form an equivalence class.

The fact that the compresence relation, C, is symmetrical, transitive, and reflexive
means that C divides all the tropes between which C holds into mutually exclusive
classes of tropes, classes without any members in common. The members of each
equivalence class of compresent tropes stand in C with one another, but do not stand in C
with any other tropes. These mutually exclusive classes of tropes are bundles. In more
concrete terms, everyday objects like tables, chairs, galaxies and people are mutually
exclusive classes of compresent tropes.

This solution is simple and highly economical. It is simple, in part, because it makes
use of very basic elements of set theory and is extremely straightforward. It is economical
in the sense that it solves the problem of individuation without any ontological additions
(or so it seems). Hence, it should hardly be surprising that bundle theory is the orthodox
view among trope theorists.119

3.5 Space-Time

In order to use the compresence relation, construed as a relation between tropes and
space-time, to solve the problem of the individuation of substances, an account of space­
time is required. In the course of the following discussion, it will be assumed that the two
most plausible accounts of space-time are the compositional account and the realist
account. The compositional account is exemplified by the view Armstrong holds, as
discussed in chapter two. The realist account of space-time is the view that space-time is
an entity in its own right. While there are other possible accounts of space time, only
these two options will be considered for two reasons. First, these are the views with the
highest degree of scientific plausibility. Second, actual trope theorists accept one or the
other of these views.

119This view is held by D.C. Williams, G.F. Stout, and most recently, Keith Campbell. See David
Compositional Space-Time

In the context of a trope theory, the compositional account of space-time is that space-time is composed of tropes. On this view space-time would consist of all the tropes linked together by various spatio-temporal relations in order to form one, massive entity, namely the spatiotemporal manifold that is the physical world. Working out an account of this "would be an enormous undertaking, presumably involving both fundamental science and philosophy, to give an answer involving even the sketchiest detail." This view has in its favor that it is ontologically more economical than views which accept space-time as an entity in its own right. However, this view suffers from the following defects.

First, the compositional account of space is probably not correct. Borrowing and expanding on one of Kant's arguments, Mortensen and Nerlich present the problem of entantiomorphism against compositional accounts of space. The general structure of the argument is as follows: Entantiomorphism, of which the non congruence of objects like right and left hands and left and right handed molecules are example, seems to be an undeniable fact about the world. If this is the case, then because compositional accounts cannot capture or account for enantiomorphism these compositional accounts are false. Since the full argument is rather complex and requires the use of diagrams for its full presentation, a brief version of the argument will be given here. The Kantian argument, runs, rather roughly as follows: There is a difference between left and right which is not a feature intrinsic to hands nor a relation between hands, nor between a hand and any particular part of space it occupies. The difference between right and left hands lies in a relation between a hand and space regarded as a whole.

120These tropes do not, of course, include space tropes and time tropes, for this would be a realist position about space-time.
It should be clear from this brief summary of Kant's argument that it involves space and not space-time. It should also be obvious that Kant was unaware of the theory of relativity when he made his argument. It may be wondered if Kant's argument, given the context in which it was presented, is still any good. After careful consideration, Mortensen and Nerlich conclude that the argument is still effective even in the context of relativity and modern views of space-time. They support their conclusion by showing, with the aid of various diagrams, that neither relativity nor the modern conceptions of space-time serve to undermine the argument. The general argument they present is as follows.

The theory of relativity involves the denial of absolute spatial distance. Instead, any spatial distance is relative to a particular frame. Since for one object to be a counterpart of another involves a sameness of distance between corresponding parts of the objects, it follows that congruous and incongruous counterparthood are frame relative. This claim is established by Mortensen and Nerlich by showing how two incongruous counterparts can, by switching frames, become congruous counterparts and vice versa. If left and right handed objects were merely incongruous counterparts, then Kant's argument would fail in the face of relativity. This is because handedness would simply be a matter of the relation between spatial objects and not a matter of the relation between objects and space itself. However, Mortensen and Nerlich argue that this is not the case:

However, while incongruous counterparthood is frame relative, handedness is, in general, not. Subject an actual hand shape to any Lorentz transformation and it remains left and handed, if it was left and handed before. A (three dimensional) screw or spring remains handed relative to any (Lorentz) frame. More laboriously, the world-tube which is the 4-object associated with what is a left hand in some reference frame yields a left hand in the space of any other frame.

\[\text{123} \text{C. Mortensen and G.C. Nerlich, "Spacetime and Handedness", Ratio, 1983, pp.6-12.}\]
\[\text{124} \text{The pair of symbols 'E' and 'F' are examples of congruous counterparts, while the symbols '1' and '3' are examples of incongruous counterparts.}\]
\[\text{125} \text{C. Mortensen and G.C. Nerlich, "Spacetime and Handedness", Ratio, 1983, p.8.}\]
Since handeness is preserved across all frames, it would follow that being handed is not a matter of spatial distance relations among spatial objects. Rather, it would have to be a relation between the handed object and space itself. This is because the relations of spatial distance between objects change with each frame of reference. If handedness, like counterparthood, was a matter of such relations, then the handedness of an object would, in at least some frame changes, change. However, since handedness is constant through all frame changes, handedness must be a relation between the object and something that remains constant through all the frame changes. This is, of course, space itself. Thus, Kant's argument is still effective, even in the context of relativity.

While Mortsensen and Nerlich do not argue for there being handed objects, it is clear that there are such objects. In addition to mundane examples like hands, gloves, and mittens, one clear scientific example is the existence of right handed or dextro-amino acids and left handed or levo-amino acids. These amino acids are identical in chemical composition and differ solely in their handedness. This handedness makes quite a difference in this case. Humans can only digest levo-amino acids and hence cannot derive any nourishment from organisms which contain dextro-amino acids. Since handedness is undeniably a fact about the world, it is clear that compositional accounts of space-time need to be able to account for handedness. And, if Kant, Mortensen and Nerlich are right, the existence of handed objects requires space-time to be a real entity, so that it is reasonable to accept that space-time is real.

Another reason to accept the reality of space-time is the fact that its reality has been accepted by physicists. "Standard theoretical physics postulates a spatial or spatiotemporal manifold in which objects or events occur. The manifold looks for all the world like the realist's space or space-time, and so we should conclude that space is real." The fact that the reality of space-time is an accepted part of the best physics of this

time provides a good reason to accept that it is real. If modern physics is correct, which it seems to be, then compositional accounts of space-time are incorrect.

Furthermore a compositional space-time does not provide the needed basis of individuation. The problem can be put forth as follows. According to the bundle theorist, for A to be compresent with B is for A to occupy the same place at the same time as B. For two bundles of tropes, A and B, to be distinct is for the tropes that compose A to be compresent with one another but to fail to be compresent with the tropes of bundle B. Hence, bundles are individuated by their compresence with distinct spatial-temporal locations. Unfortunately, on the compositional account, these space-time locations are constructed out of tropes and hence a space-time location is itself a bundle of tropes. However, in order to serve as a basis of individuation, these space-time locations must themselves be individuated. Since an appeal to compresence would be circular, the sophisticated bundle theorist faces a serious problem. In light of these results, it would be best to reject the compositional view.

Space-Time Realism

In the context of a trope theory, space-time realism is the view that space-time is an entity in its own right, distinct from the entities that exist "within" it. The question is: given realism, is space-time a distinct ontological kind or not? For the trope theorist, there are two options in regards to realism about space-time. One view is that space-time is an ontological kind of its own, distinct from tropes. This view easily avoids the two arguments that proved damaging to the compositional account of space. The first problem is avoided since the realist account of space is supported by the argument from

---


129 This is because for space-time A to be different from space-time B would be for the tropes of A to occupy space-time location C which is different from the space-time location D of the tropes of B. Of course, what it is for C and D to be distinct would have to now be analyzed and so on, into infinity.
enantiomorphism and is in accord with the best current physics. Further, this view avoids the second objection. The circularity problem that the compositional account suffers from arises only on the condition that space-time is composed of tropes. Since, on this view of space, space is not composed of tropes, the circularity argument fails to count against this view. The second option is to accept that while space-time is real, it is of the same ontological kind as the other tropes. The view endorsed by Keith Campbell is to take space-time to be a trope. This view is distinct from the compositional account of space-time since the compositional view is the view that space-time is composed of non-space-time tropes and this view accepts space-time as a type of trope. The compositional view is a reductionist view of space-time whereas Campbell's view is not. Each of these view will be examined below.

Though the defects of the trope-substratum view and the bundle account s involving compositional space-time indicate a need to accept space-time realism, there are still two more important issues to be settled. The first is determining whether to accept space-time as a single trope, as Campbell does, or to accept space-time as a distinct ontological kind. The second is determining whether or not a bundle account of individuation involving a compresence relation between tropes and space-time is adequate or whether an alternative solution is required. These issues will be addressed in the next few sections.

3.6 Keith Campbell: Fields and Quasi-Tropes

In light of the results of the previous sections, it has been concluded that the most plausible trope-theory will be a bundle of tropes view involving space-time realism. The most completely developed view of this sort in the modern world is that of Keith Campbell. Although Campbell's view is very plausible, it suffers from serious defects which will be examined below. Because of these defects, it is contended that an alternative to Campbell's theory is required.

---

Campbell's Position

Keith Campbell's theory is highly complex and covers the entire problem of universals. What will be presented here is only a brief account of his theory and only those sections which are relevant to the topics at hand, namely the individuation, organization, boundary, and nature of tropes problems.

According to Keith Campbell, the world consists of five tropes: space-time, gravitation, electromagnetism, the weak nuclear force, and the strong nuclear force. Excluding space-time, "All basic tropes are space-filling fields, each one of them distributes some quantity, in perhaps varying intensities, across all of space-time." According to Campbell, these trope-fields do not have parts, do not have edges, and do not expand except by "swelling." Aside from these brief descriptions, Campbell offers only a relatively brief discussion of just what fields are.

It is important to note that Campbell is claiming not just that there are five types of tropes, but that there are literally only five tropes, each of a different type, in the world. This view runs into the obvious problem that it fails to correspond with the world of everyday experience. Campbell acknowledges this and accepts that the recovery of the manifest world, the world of concrete, medium-sized specimens of dry goods like tooth brushes and loaves of bread, is an important task for any metaphysical theory. Campbell claims that this task is not too difficult and offers the following account of his recovery of the manifest world:

The density of mass/energy (which is a composite measure of the local values of our five field tropes) can vary very sharply across very short distances; this is what gives us, in manifest experience, objects with what seem to be sharply definite surfaces, existing in a quite distinct medium, such as the atmosphere. It is sudden transitions in the local values of the fields that lead us to think in terms of definite located characteristics, such as the temperature, acidity or magnetism of the body we are investigating. We can in thought separate out from the field small, bounded

---

131He leaves open the possibility that there might be more tropes, such as mental tropes.
subsections of that field (and the other fields that exist in that place) and treat these complex subsections, abstracted in this way, as though they were separate entities. We can treat what are eddies in the stream as if they were bricks in the wall.\textsuperscript{134}

These "eddies" are what Campbell calls "quasi-tropes". According to Campbell, quasi-tropes are spatially restricted subsections of fields. They are what he calls "pseudo-parts" of these fields, since fields have no real parts.\textsuperscript{135} Ordinary, complex objects are "composed" of these quasi-tropes. "The co-location of a complex concrete object's properties is a supervenient fact. It arises from the location, i.e. the specific coincidence with a region of space-time, of a region of relatively high value of several field quantities."\textsuperscript{136} Ordinary objects, then are just bundles of quasi-tropes which depend on the real tropes.

One way, it would seem, is to think of a trope as analogous to a bowl of pudding that has been dumped on a table (which plays the role of space-time). Sections of the pudding will be thicker than others. The regions of varying thickness in the pudding may be seen as analogous to the various regions of variations in local values. In terms of the ordinary objects of everyday experience, the pudding analogy can be pushed even further. Imagine that the dumping of the pudding, in addition to creating areas of various thickness, creates interesting patterns in the pudding. The human mind will, naturally, be able to "see" various shapes within the pudding, like people "see" faces and so forth in wallpaper patterns and wood grains. In the case of tropes, people are sensing "swirls and patterns" in the trope fields and "seeing" tables, chairs, possums, and so forth. Of course, these objects are not just the product of human imagination, since the "swirls and patterns" are quite real. Hence, Campbell claims that normal objects are more than mere projections of the human mind.\textsuperscript{137}

Campbell solves the problems of individuation in the following manner. In the case of individuating one substance from another, Campbell has the following solution:

A genuine substance is a total set of coincident tropes, and on the field view, each of these tropes is a field. Since they are all coextensive with space-time, they all coincide with one another always and everywhere.

Thus if we wish to continue with the concept of substance in our metaphysics, we would reach Spinoza's conclusion, that there is just one genuine substance, with the fields as its modes.

By accepting only one substance, Campbell effectively "solves" the problem of individuation of substances. Since there is only one substance there is no need to individuate this substance from any other substances. What remains to be discussed is the individuation of what may be called "quasi-substances" which are bundles of quasi tropes.

The key to the individuation of "quasi-substances" is the nature of quasi-tropes. In order for there to be quasi-substances there must be quasi-tropes and quasi-locations for these quasi-tropes to be compresent with. The existence of quasi-tropes and quasi-locations depends on the five field tropes not being uniform throughout their distinct extents. In other words, each field admits of an internal heterogeneity. According to Campbell, the internal diversity of these fields is brought about by two causal processes. The first is what he calls a "quasi-causal" process. This process is the transmission of the field quantity across the field. These processes are quasi-causal and not genuinely causal because they involve sub regions of a field. According to Campbell, sub-regions of fields are not separable parts and hence are quasi-tropes. Therefore, says Campbell, such causation is quasi-causation. According to Campbell, genuine causation occurs only between fields. Campbell gives the examples of matter annihilation and the subsequent

---

138 The success of this solution is contingent on their being only one world. If there are multiple worlds, either in the sense of there being Lewis style possible worlds or in the sense that there are multiple space-times, then a further account of individuation of worlds would be required. However, the existence of other such worlds is highly controversial and adequate treatment of the topic would go far beyond the intended scope of this work.

production of gamma rays and chemical explosions which transfers energy from one field to another. "These changes are changes in the distribution of the field quantity across the spatio-temporal extent of a field and they are produced by comparable changes in another field that is superimposed on the first and totally interpenetrates it, each touching the other at every point." Now, an account of the individuation of quasi-tropes, quasi-locations, and quasi-substances will be presented.

A quasi-trope, as has been noted, will be a region of one of the five tropes that is distinct from the other region in terms of the quantity in that region of the trope. A quasi-location, which must also be a quasi-trope since Campbell takes space-time to be a trope, is a region of space-time. Presumably, the same way the other tropes are "divided" into quasi-tropes also serves to divide up the space-time trope. Thus, a quasi-substance will be a bundle of quasi-tropes. Before the principle of individuation of quasi-substances can be presented, the notion of compresence must be modified slightly. Quasi-compresence is a relation with all the features of compresence (transitivity, etc.), but it is defined in the following terms: quasi-trope A is quasi-compresent with quasi-trope B iff A and B both occupy the same quasi-location. These quasi-substances are individuated in the following manner: quasi-substance A is distinct from quasi-substance B iff the quasi-tropes of A are quasi-compresent with each other but are not quasi-compresent with the quasi-tropes of B.

Ordinary objects, like Texas Longhorns and human brains, are "local subregions of our superimposed fields, distinguished from other subregions by the detail of their interior variegation (and, to some extent, the detail of their exterior contour)." Hence, the following principle of individuation of ordinary objects can be given: object A is

---

141 It should be noted that this is my interpretation of what Keith Campbell is using as a basis for individuation since he does not explicitly spell out this position.
distinct from object B iff the A's sub region has a different interior variegation than that of sub region B.

Campbell's view is rather appealing. It offers an effective solution to the problem of individuation of substances and does so by making use of only one ontological kind. In contrast, trope-substratum views which involve accepting the existence of a second ontological kind are less economical. This fact gives Campbell's view an initial advantage over such competing views. What remains to be determined is whether or not the defects of this position outweigh its initial advantage relative to its competitors.

**Problems with Space-Time**

The main purpose of this section is to establish, within the context of Campbell's theory, that space-time is not a trope and instead functions as a substratum. Intuitively, while spatial and temporal relations may well be properties (and hence tropes), it simply does not seem to be the case that "space-time itself" (taken as an entity in its own right as Campbell does) is a trope. Tropes are, on Campbell's own view, qualities and "they exist as individuals at unique place-times."143 Space-time, taken as an entity, does not seem to be a quality and it simply makes no sense to claim that space-time exists as an individual at a unique place-time. While the initial incredulity that the claim that space-time is a trope meets may be argued against, Campbell does not provide any arguments or any good reasons to accept that space-time is a trope. He simply asserts that space-time is a trope without argument. The fact that Campbell fails to provide reasons to abandon this initial intuition counts against him. This is because the burden of proof rests upon him and he has failed to even motivate the acceptance of his claim.

While the "incredulity challenge" has some force, a more telling argument is as follows. As was noted above, an individual trope is extended across all of space-time and it is not an internally homogenous entity. Each trope has various regions and the local

---

value of each region may vary greatly. What needs to be determined is the basis upon which these various regions are individuated from one another. The corresponding question is: what is it for region A of trope T to be different than region B of trope T? There seem to be two possible answers. The first is that regions are individuated by their spatial-temporal location and the second is that regions are individuated by their values.

On the first view, region A of trope T is different from region B of trope T iff A has a different spatial-temporal location than B. The defect in this view, for a bundle theorist like Campbell, is that space-time is an entity that is serving in the role of an individuator. In other words, on this view space-time is functioning as a substratum. Since Campbell is only willing to accept tropes\textsuperscript{144} , it is clear that this is not an option open to him (or any bundle theorist). However, it may be replied that while space-time is functioning as a substratum, it is still a trope. Therefore, the bundle theorist can use space-time as an individuator without accepting a second ontological kind. However, space-time has regions and these regions are the various locations in space time. These locations are quasi-parts and "they belong to space as vortices and eddies belong to a flowing river..."\textsuperscript{145} Despite there being only quasi-parts, these regions still need to be individuated from one another. If space-time is a trope, then the regions of space-time are either individuated in terms of their spatio-temporal locations or in terms of their local values. It cannot be the case that spatial-temporal locations are individuated by spatial temporal locations. After all, the following analysis is circular: spatial-temporal location A of space-time is a different spatial-temporal location than location B iff A has a different spatial-temporal location than B. Hence, regions of space-time must be individuated by their local values. This brings the discussion to the second view.


The second view is that the regions are individuated by their local values. On this view, region A of trope T is different from region B of trope T iff the value of A is different from that of B. On this view, regions are individuated by the quantitative differences between them. The main difficulty with this view is as follows. The first premise of the argument is that there seems to be no reason why different regions of a field could not have the same value. Campbell's discussion of the possibility of using local values to individuate spatial-temporal locations is particularly illuminating:

Each region may be unique because the net tensor resultant at any one place is different from that of any other. In such a circumstance, the values on the tensor would provide a *de facto* unique description for every place...

Unhappily, I can see no reason of principle why two different regions should not have tensor values in common, which wrecks the proposal.\(^{146}\)

The second premise of the argument is that on the view under consideration two regions that have the same local value would be the same region. Since this contradicts the initial claim that two regions can have the same value and there is no good reason to reject this claim, it follows that the basis of individuation for regions cannot be a difference in local values. As such, this view should be rejected. However, these regions still need to be individuated.

In order for an account of individuation to succeed, the dilemma presented above must be avoided. One way to avoid the dilemma is to take space-time to be an entity of a different ontological kind than the tropes. On this view, region A of trope T is different from region B of trope T iff A has a different spatial-temporal location than B. Since space-time is not a trope, the circularity problem presented above does not arise\(^{147}\). As to the individuation of spatial-temporal regions, it would be best to accept that their individuation is primitive. As will be argued later, every proposed solution to the problem of universals will have to take individuation as a primitive at some point, so this is not

---


\(^{147}\)This is because if space-time is not a trope, then its regions will not be regions of a trope and hence will not have to be individuated by spatial-temporal regions.
problematic. Further, it is rather unclear what the difference between spatial-temporal locations could be analyzed in terms of, once it is accepted that space-time is an entity in its own right. The primitive individuation of space-time locations seems to be in fact, an ideal and clear example of individuation that cannot be analyzed into something any more basic. After all, what is more basic than space-time?

While taking space-time to be an entity of a different ontological kind than the tropes that serves as an individuator does solve the problem presented above, it does so at the cost of a two category ontology consisting of tropes and space-time. While accepting a two category ontology is less economical than accepting a one category ontology, it simply does not seem that there is a plausible alternative. Thus, it would be reasonable to reject Campbell's view in favor of a theory which takes space-time to belong in an ontological category of its own, distinct from that of tropes.

Problems with Tropes

As was noted above, Campbell's tropes are quite a bit different from the normal conception of what tropes are. His tropes are extended across all of space time and have a great deal of internal variation such that tropes have various internal regions of different values. Since there are only four tropes (excluding space-time) which are spread across all of space-time, the internal heterogeneity of tropes plays a vital role in his account of the individuation of substances and everyday objects. On Campbell's view, quasi-substances, which are bundles of quasi-tropes, are individuated by quasi-locations (regions of the space-time trope). Without there being an internal variegation of tropes, there could be no quasi-tropes. If there were no quasi-tropes, Campbell's theory would not be able to capture the manifest world. This is because the quasi-tropes play a vital role in the individuation of ordinary objects: According to Campbell, ordinary objects are "local subregions of our superimposed fields, distinguished from other subregions by the detail of their interior variegation (and, to some extent, the detail of their exterior"
contour). Without quasi-tropes, there could be (on Campbell's view) no sub-regions of fields. Since ordinary objects are such sub-regions, if there were no quasi-tropes, there would be no ordinary objects. Thus, it should be clear that quasi-tropes are vital in Campbell's recovery of the manifest world for without them his theory would not be able to provide an account of the manifest world of human experience.

Campbell's field tropes are rather problematic sorts of entities. Since tropes are metaphysically simple, it is both mysterious and counterintuitive to claim that they have internal variegation. While the fact that they are mysterious and counterintuitive makes these field tropes somewhat problematic, they suffer from further difficulties.

The first difficulty is that the only account given of the internal variegation of tropes is that it is a result of a quasi-causal process. His account of this process is that it is the transmission of a field quantity across the field itself. He gives as examples the wave radiation of electromagnetic energy and the transmission of a mass density along the temporal axis. According to Campbell, "these processes are quasi-causal because their terms are sub-regions of a field. Sub-regions of a field are not really separable parts and so count only as quasi-tropes. The orderly transformation in which they are involved are hence quasi-causal." This account is rather problematic. First, quasi-causation is a rather odd and rather under-explained process. Since tropes have no constituents it is rather odd to claim that they have internal sub regions and that quasi-causal processes occur which involve the transmission of field quantity from region to region. A second and perhaps more telling objection is as follows.

Campbell accepts Plato's dictum that power is the mark of being: "where a theoretical item has no distinctive effects, it should not be accorded real ontic status."

149 To be metaphysically simple an entity must be such that it has no constituents that are more metaphysically basic then itself.
It also seems to be the case that where a theoretical item has a distinctive effect, it should be accorded real ontic status. This sort of argument is put forth by Plato's Eleatic Stranger:

I suggest that anything has real being that is so constituted as to possess any sort of power either to affect anything else or to be affected, in however small a degree, by the most insignificant agent, though it be only once. I am proposing as a mark to distinguish real things that they are nothing but power.\(^{152}\)

Given his mark of being, since the various regions of a trope have causal efficacy, it would follow that they have real being. In the case of determining which types of tropes to accept, Campbell uses the mark of being principle to exclude such things as trends\(^{153}\) from his ontology and to admit the four basic forces as tropes (as discussed above). Given his acceptance of the mark of being as a principle upon which to accept and reject entities, it seems that since the sub-regions of tropes are causally efficacious they should be accorded the status of real beings. Hence, it would seem that the sub-regions of tropes should be, on Campbell's own principles, tropes in their own right. Campbell, as has been noted above, rejects this claim (since his quasi-tropes are not real tropes). The basis for this rejection, though not explicitly stated, is that the causal processes that take place between the regions of a trope are not causal, but quasi-causal. Since it is causal efficacy that is the mark of real being and quasi-tropes are not causally efficacious but merely quasi-causally efficacious, it follows that quasi-tropes are not real but quasi-beings. It seems, however, that this reply is inadequate. Quasi-causal processes, according to Campbell, differ from causal processes because quasi-causal processes involve sub-regions of a single field trope whereas real causal processes involve two or more field tropes. Thus, quasi-causal processes are quasi-causal processes because they involve quasi-tropes. But, quasi-tropes are not real tropes since they are involved in quasi-causal


and not real causal processes. Since this is circular, unless another justification can be found for denying quasi-tropes real being, it seems that they must be accepted as real beings. This is because there is, at this point, no non-circular reason to deny that the causal processes that obtain between the regions of field tropes are instances of real causation. Hence, it should be accepted that quasi-tropes are actually tropes. But, if quasi-tropes are real tropes, then Campbell's account of the individuation of ordinary objects fails and a new one is required.

3.7 Solutions to The Boundary Problem and the Nature of Tropes

In this section the boundary problem will be examined and the claim that tropes are non-variegated, spatially restricted entities will be argued for.

*The Boundary Problem*\(^{154}\)

The boundary problem, in the context of a trope theory, is as follows: Where and when does one trope end and another begin? Since substances are composed of tropes, this question is closely linked to the question of exactly where and when one substance ends and another begins. Until the principle upon which the boundaries of tropes are set is determined, the problem of the individuation of substance (namely where and when one ends and another begins) cannot be addressed. Campbell claims to solve the boundary problem through the use of field tropes. As was argued above, this view suffers from serious difficulties. However, unless an alternative account can be offered, field tropes may have to be accepted despite their defects.

According to Campbell\(^{155}\), there are three sub-problems of the boundary problem. The first is the part/whole problem, the second is the spectra problem, and the third is the temporal problem. These problems will be addressed in the order they were presented.

\(^{154}\)In this context on spatial and temporal boundaries will be considered. However, the arguments would also apply to other dimensions. These other dimensions are not discussed primarily because to do so would complicate matters unnecessarily and, perhaps more importantly, it is not clear what, if anything, these other dimensions are like.

The part/whole problem is best expressed in terms of the following example. Consider a white object, for example a piece of paper. Assuming that there are color tropes, it is clear that the whiteness of the paper is not one trope. Tropes are simple in that they do not have parts or constituents. While pieces of paper can be cut up into small, white pieces, a trope cannot. Thus, there cannot be just one white trope for such an object. The problem is determining just how many white tropes are constituents of the paper. In more general terms, the question is: what are the spatial dimensions of tropes? The question can, in the context of spatially located tropes, in principle be answered. For example, in the case of color tropes, the answer is: a color trope has a spatial extent equal to the smallest possible colored surface. In general terms, the spatial extent of an F trope is the spatial extent of the smallest possible F entity. Naturally, non-spatial tropes have no spatial extents. Thus, the first problem is easy enough to solve.

The second problem, the spectra problem, is quite a bit more difficult. Once again, a color example will be used to present the problem. Consider a color spectrum, such as that of a rainbow. At what point, exactly, does indigo end and violet begin? Or, to use another example, consider a melting chunk of ice in a glass of water. The spectrum here is between solidity and liquidity. Where exactly does the solid ice end and the liquid water begin? The general problem is determining the basis upon the exact extent of various components of a spectrum. Campbell argues that

> All attempts at insisting on sharp boundaries within spectra seem doomed to failure. If we allow no variegation across the extent of any one given trope, we are committed to an atomist path, one which comes to rest only in point atoms. We must resolve the continuous variations in our world into an infinity of distinct items with indistinguishable neighbors. And because the transitions are smooth, there is no natural break between one of these items and its neighbors.\(^\text{156}\)

Since variegated tropes suffer from rather severe difficulties, it would be better to solve this problem without making use of them. Hence, it will be argued that the spectra

problem can be solved when tropes are taken to be unvariegated. The solution is as follows.

Consider, for example, a clear instance of a spectrum such as a linear gray pattern produced on a high resolution black and white computer screen or television set. In this case, there are no clear demarcation points between one shade of gray and the next. However, sufficiently close examination of the pattern will reveal that the shades of gray are composed of black pixels and white pixels. The shade of gray of a particular area is, in fact, a function of the concentration of black pixels and white pixels in that area. The demarcations between the black pixels and the white pixels are quite clear and admit of no ambiguity so that it is the case that any particular pixel of the screen is either black or white. It is not, of course, claimed that tropes are pixel sized. What the argument does indicate is that an ambiguous spectrum can be accounted for in terms of the distribution of individual color tropes whose demarcations admit of no ambiguity. This same sort of general line or reasoning can be extended to cover other situations. In any case involving such spectra, sufficiently close examination will reveal that the ambiguity stems from the limitations of human perception and not from any actual ambiguity in the world. Thus, the ambiguity of a spectra can be preserved without accepting variegated tropes.

The same sort of account can be given in the context of quantitative situations. For example, imagine a rod shaped object which has a "density spectrum" across its length such that it has a high density on one end, a lower density on the other end, and varying degrees of density in-between. Suppose further that there are no clear demarcations between the various densities so that they "blend" together. On the view being defended here, the density would be a function of the concentration of density tropes, such that the density of any given area of the rod is a function of the concentration of density tropes. On the trope field view, the rod would have various sub-regions of a trope as a quasi-
tropes and the fact that the field trope is variegated would account for the density spectrum of the rod. Hence, an unvariegated trope can be substituted for a quasi-trope. Further, a resemblance class of F tropes can be substituted for an F field trope. Whereas the F field trope has internal variegation across space-time, the members of the class of F tropes are distributed across space-time in varying degrees of concentration and this distribution functions as the variegation of the field tropes. Thus, the unvariegated trope view replaces internal variegation with trope concentration. Since unvariegated tropes can do all the work that field tropes can and are far less problematic, it would be most reasonable to reject field tropes in favor of non variegated tropes.

The third, and final, boundary problem is the problem of temporal parts. The difficulty here lies in determining exactly when one trope ends and another begins. Campbell gives the following example as an argument for accepting field tropes. Suppose that the trope under consideration is a temperature trope of a stove top gas burner. Suppose that for the first half of its existence it was boiling a teapot full of water and the second half it was steaming some vegetables. Since there are two different causal processes (boiling the water and steaming the vegetables), and in a trope philosophy all causes are tropes, it would be suspected that there was one trope which was involved in boiling the water and another which was involved in steaming the vegetables, and not one single trope involved in the process.158 The problem lies in determining exactly when one trope ends and another begins. In this case, at exactly what time did the water boiling trope cease and the vegetable steaming trope begin? Campbell concludes that because of the difficulty in providing temporal boundaries for tropes, field tropes, which have no boundary problems since they extend across all of space-time159, should be accepted.

159There is no boundary problem because the question when does trope A begin and when does trope A end is easy to answer: A begins at the beginning of time (if there is such a point) and ends at the end of time (if there is such a point).
If Campbell's solution avoids the problem, then a more restricted solution can be had. Campbell takes his tropes to extend across all of space-time. Because they extend across all of space, they need to admit of internal variegation, for the reasons given above. It is this internal variegation across space that creates the vast majority of the difficulties that Campbell faces. Since the problems stemming from internal variegation do not arise from the fact that he takes tropes to extend across the entire dimension of time, it seems reasonable to accept that tropes span the whole length of time. This would require accepting that tropes are neither created nor destroyed within time. This is not a special problem for the view put forth since its main competitor, namely Campbell's theory, has tropes that span across all of time. This view is also shared by Armstrong. He asserts, but does not argue, that "properties are not the sort of thing which can be destroyed (or created)." However, there seem to be two good reasons to accept that tropes are not the sorts of things that can be created and destroyed. The first is that such a postulation is required to solve the problem of temporal boundaries. Since this is a plausible solution, it seems reasonable to accept the claim that tropes are not subject to destruction or creation within the spatial-temporal dimensions. A second reason to accept this claim is the law of conservation. According to the best physicists of the today, matter and energy are such that they can neither be created nor destroyed. If this is correct, then if there is good reason to accept that matter and energy are ultimately composed of tropes, it would follow that tropes are also such that they can neither be created nor destroyed. Hence, it seems reasonable to accept that tropes span all of time, but not all of space.

If tropes can be created and destroyed, which seems rather unlikely, then the temporal boundary of an individual trope would be set by its creation and its ultimate destruction.

---

160. This does not preclude tropes from being created by God for example if He created the space-time tropes occupy. It would also not preclude tropes from perishing if time ever "came to an end", whatever the end of time might be.

Since the demarcation between existence and non-existence is rather clear, the temporal boundaries of creatable and destroyable tropes would admit no ambiguity. So, for example, if trope A were created at T1 and then destroyed at T3, T1 and T3 would form the temporal boundaries of A. Of course, arguments would be required to support the claim that tropes can be created and destroyed. Fortunately, the boundary problem is solvable whether tropes can be created and destroyed or not.

In light of these results, there seems no reason to accept space-time spanning field tropes and good reasons to reject them. If tropes cannot be created and destroyed, then the unvariegated tropes would span across all of time. If tropes can be created and destroyed, they could exist for shorter spans of time. The essential difference, however, between the view put forth here and Campbell's view is that the variegated field tropes extend across all space-time and the tropes endorsed here span, at most, across all of time, but not across all of space (at least in not a manner that admits of internal variegation).

3.8 A Solution to the Problem of the Individuation of Substances

A solution to the problem of the individuation of substances requires answers to three questions: 1) what is it to be a substance?, 2) what is it to be one substance?, and 3) what is it for one substance to be a different substance from another? The answer put forth to the first question is that a substance is a bundle of tropes. The second and third questions have yet to be completely answered.

In order to adequately answer question two, the spatial boundaries of a single substance must be determined. This part of the problem has already been solved. The spatial boundaries of a substance, s, at time T1 are a function of the boundaries of the tropes that compose the substance. In other words, the spatial boundaries of the composing tropes will define the spatial boundaries of the substance such that the substance ends where its composing tropes end. The temporal boundaries of a substance is a function of the temporal boundaries of the composing tropes, such that the substance
has as its temporal boundaries \( T_1 \), which is the time its first tropes come into existence, and \( T_n \), which is the time when the last tropes of the substance cease to be.

*Space-Time as an Answer to Questions Two and Three?*

In the previous section the spatial and temporal boundaries of tropes were considered. While the boundaries of substance have been defined in terms of the tropes that compose a substance, what must be determined is what it is for tropes to compose one substance as opposed to another. What must now be determined is the basis for the individuation of substances. Because of the failures of the various view considered above, it is clear that a new approach to the problem is required.

Since space-time has already been accepted as a real entity, it is tempting to use spatial positions to individuate substances. Since Campbell's field trope view was found to be defective, what will now be briefly considered is a version involving only tropes. On such a view, substance A is different from substance B iff the tropes of A are compresent with location \( S_1 \) and the tropes of B are compresent with location \( S_2 \) and \( S_1 \neq S_2 \). Otherwise, they are the same substance. The problem with this view is that a substance could change its spatial location without becoming a different substance. This is because if A was at \( S_1 \) at \( T_1 \) and moved to \( S_2 \) at \( T_2 \), then A at \( T_1 \) would be a different substance from A at \( T_2 \), even if everything about A was the same except for its spatial location. Since this is absurd, this account will not do. This account may be made a bit more complex by taking into account the temporal element: substance A is different from substance B iff the tropes of A are compresent with location \( S_1 \) and the tropes of B are compresent with location \( S_2 \) at \( T_1 \) and \( S_1 \neq S_2 \). Otherwise, they are the same substance. This avoids the first problem. If A moves from \( S_1 \) to \( S_2 \) and B moves from \( S_2 \) to \( S_1 \) at \( T_2 \), then A and B still have different locations and are still different substances. Accepting this view would require one to reject the possibility of two distinct substances occupying the same place at the same time. This is because, on this account of
individuation, "two" substances occupying the same place at the same time would actually be a single substance. The problem is that there does not seem to be any principled way to deny the possibility of two distinct substances occupying the same spatial location at the same time.\textsuperscript{162} After all, if many tropes can be compresent with the same location, it is hard to deny that another substance could not move into that location. Hence, this view will not suffice. In order to (attempt to) avoid this difficulty, it may be claimed that total-positions, as described in chapter two, should serve as the basis for individuation. On this view, substance A is distinct from substance B iff the tropes of A are compresent with total position TP1 and those of B are compresent with TP2 and TP1 $\neq$ TP2. There are two problems with this view. First, there is still the possibility that two distinct substances will overlap and hence they would be, on this analysis, be one substance and not two. Second, this view would make it impossible for any substance to have had a different total position. Since total position individuates substances from one another, if a substance were to have had a slightly longer or shorter duration or if it had moved slightly differently through space, it follows that it would necessarily be a different substance. So, for example, if a red sphere that lasted for 33 seconds and one nanosecond in this world had instead lasted only 33 seconds, it would have not been the same red sphere. This seems a bit odd. In light of these difficulties, it would seem that some other basis for the individuation of substances must be found.

Compresence as an Answer to Question Two

On the view put forth, to be a single substance is to be one bundle. To be one bundle is to be a group of tropes which are compresent with one another and not compresent with any other tropes.

As noted above, Compresence is generally described as a relation that holds between any two tropes that are tropes of the same complex entity. On the view being put forth,

tropes are not compresent with spatial-temporal locations, because of the problems such views faced, but with each other. Compresent tropes will still occupy the same location, but the relation will hold between the tropes and not between the tropes and space-time.

What might the relation of compresence be? This is a difficult question, but a rough answer can be given to it. One interesting feature of reality is there are necessary connections at the level of determinable level associated with contingency between determinates. Sounds, for example, have volume and pitch. These can vary independently, suggesting we are dealing with different tropes, yet every volume must be a volume of some pitch or other, and every pitch must have some volume or other. Shape and size are a familiar pair of the same sort. The purity and hues of color another.

I have no account of the metaphysical, rather than logical, necessities which seem to be involved here. Nor, I suspect, does anyone else. But whatever the correct account might be, there is no reason to think it will tell against abstract particularism in favour of realism about universals.¹⁶³

These sorts of connections which serve to group properties together, seem to be the sort of connection required to hold tropes together to form bundles. A single sound, for example, would be a group of tropes connected together in whatever manner such connections work. A single substance, capable of existing on its own, would be a bundle of tropes connected in whatever manner such connections work. Since 'compresence' is the name taken for the connection which joins tropes to form bundles, these connections between tropes will be called by that name.

Compresence is a symmetrical relation, so that if trope A is compresent with trope B, then B is compresent with A. The relation of compresence is also transitive, so that if A is compresent with B and B is compresent with D, then A is compresent with D. The compresence relation is also reflexive, since the if A is compresent with B and B is compresent with A, then A is compresent with itself. These features of compresence are reasonable to accept, as can be shown in the following illustration. Take a pitch trope, P

and two volume tropes, V1 and V2. Suppose that P is connected to V1. It would follow that V1 is connected to P. After all, if a pitch has a volume, then that volume has a pitch. Suppose that V1 is connected to V2, forming one volume that is louder than V1 or V2 alone. P would also be connected with V2. After all, with the addition of V2 the volume would be greater, but the pitch the same. Since the relation of connection is symmetrical and transitive, it is also reflexive.

The fact that the compresence relation, C, is symmetrical, transitive, and reflexive means that C divides all the tropes between which C holds into mutually exclusive classes of tropes, classes without any members in common. The members of each equivalence class of compresent tropes stand in C with one another, but do not stand in C with any other tropes. These mutually exclusive classes of tropes are distinct bundles. In more concrete terms, everyday objects like tables, chairs, galaxies and people are mutually exclusive classes of compresent tropes.

The compresence connection, as the last quote indicated, is not readily subject to an analysis. It seems best, at this point, to follow Russell, and take the relation of compresence to be a primitive which is not subject to further analysis. Taking this option is reasonable for two reasons. First, that there are such connections seems to be an undeniable fact about the world. Thus, even though they are not explained, it seems reasonable to accept them. Second, since alternative trope theories make use of compresence, and specifically Campbell's theory, it is not a disadvantage (relative to those theories) to accept compresence. However, accepting that the relation of compresence holds between tropes and not between the tropes and space-time avoids the

164 Since volume is a quantity it is likely that volumes are composed of minimal volume tropes (the lowest possible volumes) as per the discussion in chapter four, below.
defects that such views suffer from, which puts this version of compresence at a distinct advantage.

An answer to Question Three and the Individuation of Tropes

The answer to question three put forth in this section is that what is it for one substance \( a \) to be a different substance from substance \( b \) if for the set of tropes that constitutes \( a \) to be different from the set of tropes that constitute \( b \). Thus, substances are differentiated by their tropes. Thus, the answer to the three questions, 1) what is it to be a substance?, 2) what is it to be one substance?, and 3) what is it for one substance to be a different substance from another?, are as follows. The answer to question one is that a substance is a compresent bundle of tropes. The answer to question two is that to be one substance is to be a group of tropes which are compresent with one another and not compresent with any other tropes. The answer to question three is that substances are differentiated from one another by their tropes. What must no be solved is the problem of the individuation of tropes.

There are three questions that need to be answered in order to provide an adequate solution to the problem of the individuation of tropes: 1) what is it to be a trope?, 2) what is it to be one trope, and 3) what is it for one trope to be different from another trope.

The answers to the first question was provided above. Question two was partially answered in the context of discussing the boundary conditions of tropes. The question of what it is for one trope to be different from another trope can only be answered by taking what it is to be one trope, different from all the other tropes, as a primitive.

While such a move increases the cost of the theory being presented, it is the case that all theories proposed to solve the problem of universals must take some aspect of individuation of entities as a primitive at some level. The argument for this claim is as follows. Suppose that the individuality of an entity is not taken as primitive but is instead analyzed. Suppose that \( X \) (where \( X \) is the individuator) individuates entity \( a \). Now, either
X itself must be individuated or its individuality must be taken as primitive. If X's individuality is analyzed in terms of Y, then either Y's must be individuated by something else or its individuality is primitive. And so, on, ad infinitum. The only way to stop the regress is to accept individuation as a primitive at some level or to admit an individuator that individuates itself. If something is self individuating, then a requirement regress arises. For X to individuate itself requires that X be an individual, for it to be an individual, it is required that it individuate itself. For example, suppose that individuation were taken to be a property such that entities which had this property were individuals. The question immediately arises as to what individuates this property from all others. If it is claimed that it individuates itself, a requirement regress arises and hence this reply is inadequate. Suppose that it is replied that the property of individuation is individuated by its power of individuation. Once this is accepted, there seems to be no principled way to deny that other properties can be individuated by their powers and hence there is no need for the property of individuation. The question then arises as to what individuates powers, and the question can arise again for the answer to this question. As such, there can be no self individuating entities and individuation must be taken as a primitive at some level.

Because individuation must be accepted as a primitive at some level by all theories which involve individuals, the primitive aspects of the individuation of tropes does not count against the theory being defended any more than do the primitive individuations required by competing theories. Thus, it may be concluded that the need to accept a primitive individuation is not a special problem for the theory being defended.

3.9 A Solution to the Problem of Order

In this section the solution to the problem of order will be presented. In this section a brief sketch of objects will be presented that is sufficient to make it clear what objects are in the theory being defended.
Objects

On the view being defended, there are two types of objects. These are simple objects which consist of only one substance and complex objects which are composed of two or more substances. Simple objects, being substances, do not have parts because parts of objects are themselves objects and are capable of existing in their own right, independent of the object they were originally part of. Substances have as constituents tropes and tropes do not seem to be the sort of entities that exist on their own. As has been noted above, while objects with mass, density, and color are regularly encountered, mass itself, density itself, and color itself have never been encountered independently. This provides some reason to believe that tropes are not the sorts of things that do not exist singly. After all, it is rather difficult to accept that it is possible for there to be a world in which there is a single mass trope and nothing else.

A solution to the Problem of Order

It has been argued that substances are composed of tropes and that these substances in turn are components of objects. However, complex objects are not simply bunches of substances since there are typically highly ordered and organized entities. The organization and ordering of an object can make quite a difference. As was noted above, iso-butane and butane have exactly resembling constituents, yet they are different and this difference is a matter of their organization. Another example is the difference between a block of common table salt and a block of chlorine saturated sodium. While both objects have exactly resembling constituents, they are quite different. After all, a cow would enjoy licking one block and would quite likely have a rather dreadful time were it to lick the other. The difference between the two blocks lies in their internal structure, which is to say, in the difference in the arrangement of the molecules. Since objects are clearly
ordered and organized and order and organization clearly make a difference in the world, it is important to determine the basis of order and organization.

**Handedness**

As was argued above, the handedness of an object is not intrinsic to the object itself, nor is it a relation between objects, nor a relation between a handed object and the space it fills. Rather, the handedness of an object is the result of the relation between the handed object and space-time as a whole. Suppose that A is a right handed object and B is a left handed object and A and B have exactly resembling constituents. The difference in handedness between the two objects lies in the difference between their relations with space-time as a whole. Thus, the relation an object has with space-time as a whole determines whether it is handed or not and, if it is handed, its handedness. Hence, space-time plays a role in the organization of objects. What remains to be determined is whether or not space-time plays a larger role.

**Organization and Order**

Since it has been established that an object's relation to space time as a whole determines its handedness (left, right, or none) it seems reasonable that space-time has a larger role to play in the ordering and organization of objects. Consider the example discussed earlier of butane and iso-butane. The difference between the two types of molecules is purely structural. Since the two molecules have exactly resembling constituents, their structure can not be reduced to their constituents. This makes it reasonable to believe that some other factor, over and above the constituents of the molecules, is involved. The most plausible candidate to serve as the basis for structural differences is space time. That this is the case is made clear in the following example. Suppose that letters on a page can be taken to form an object. Suppose that object A is $AB$ and object $\Sigma$ is $BA$. Assuming that the As exactly resemble each other and the B's
exactly resemble each other, $\Delta$ and $\Sigma$ exactly resemble each other\textsuperscript{167}. Yet $AB$ is different from $BA$ and they differ primarily in the arrangement of their constituents. This difference lies in the spatial locations of the $A$s and $B$s. In $\Delta$ the $A$ is to the left of the $B$ and in $\Sigma$ the $B$ is to the left of the $A$. Thus, space-time serves as the basis for the structural difference between $\Delta$ and $\Sigma$.

It can be argued that relational tropes, and not space-time, provide the basis for the difference between the two objects. On this view, the difference between $\Delta$ and $\Sigma$ would be based in their relational tropes. Thus, $\Delta$ and $\Sigma$ would consist of their respective $A$s, $B$s, and their respective relations of to the left of. The difference would be that in $\Delta$ the to the left of relation would be $A$ is to the left of the $B$ and in $\Sigma$ the $B$ is to the left of the $A$. However, the to the left of relation also involves an ordering since in one case the $A$ is the first term and in the other it is the second. The difference between $A$ being to the left of $B$ and $B$ being to the left of $A$, could be taken as an unanalyzable fact about the nature of to the left of tropes. This has the disadvantage that it would increase the cost of the theory. Further, since the compositional account of space-time is very problematic, these relations would need to relate entities to space-time. This is rather problematic, as will be shown in chapter four. A more plausible and more economic option is to hold that the difference between the two relations is reducible to the spatial positions of the $A$s and $B$s. The $A$s and $B$s have the spatial positions they do which determines the structural features of $\Delta$ and $\Sigma$, namely that in $\Delta$ the $A$ is to the left of $B$ and in $\Sigma$ the reverse is true. In the case at hand, it is the position of the $A$s and $B$s on this piece of paper that makes it such that $A$ is to the left of $B$ in the case of $AB$. Once the $A$s and $B$s have the positions they do on the piece of paper, there is no need to postulate yet more entities to account for their positions relative to one another. Hence, while spatial relations are EN-relations, the "relating" entity is not a trope but space-time. Since there are good reasons to accept

\textsuperscript{167}It is important to note that they exactly resemble each other in terms of their constituents, not in terms of their structure (order).
space time as an entity in its own right and the space-time positions of the constituents and parts of objects can readily account for the structural and organizational features of objects, it is reasonable to accept space-time as the basis for the organization and ordering of objects.

**Final Points**

Three final points to be considered are temporal orderings, non-spatial dimensions, and a discussion of why objects have the structures they do. That the universe has a temporal order is clear from everyday experience. For example, one event precedes another and various objects that existed at one time (like live dinosaurs) no longer exist. Rather than postulate mysterious and problematic temporal-relation tropes, it would be more economical to take the temporal position of an object or event relative to other objects or events to determine the temporal relations between them. That event A comes before Event B is accounted for the fact that A occupies a position prior to B on the temporal dimension. Hence, temporal relations are EN-relations, but the "relating" entity is time, not a trope.

While the discussion has focused on space and time and spatial-temporal objects, this should not be taken as an endorsement of the exclusion of non-spatial entities. If there are such entities, they will occupy various non-spatial dimensions and their ordering and organization can be analyzed in the same basic manner that spatial and temporal ordering and organization were analyzed. Hence, the possibility that there are non-spatial entities is not a problem for the theory being defended.

One last issue is the question of exactly why objects have the order they do. The question of why objects, events, and so forth are ordered the way they are is a rather difficult question to answer and one that goes far beyond the scope of this work. For whatever reason objects, events, and so forth are ordered the way they are (by the will of

---

168 The issue of spatial and temporal relations is discussed in greater detail in chapter four in the context of Hochberg's criticism of trope theory.
God, by laws of nature, or by cosmic gremlins, etc.), their order consists in the positioning of their various elements on the various dimensions.

3.10 Conclusion

In this chapter it was argued that space-time and a primitive relation of compresence should be accepted in order to provide adequate solutions to the problems of the individuation of substances, the boundary problem, and the problem of order. It was argued that a substance is a compresent bundle of tropes and to be one substance is to be a group of tropes which are compresent with one another and not compresent with any other tropes. It was further argued that tropes are non-variegated entities which have limited spatial boundaries and that there individuation is a primitive.
CHAPTER IV
TROPES

4.1 Introduction

In the second chapter, it was concluded that plausible metaphysical solutions to the problem of universals would need to involve properties. It was further determined that it is most reasonable to accept properties as particulars (tropes) and not as universals. Also, in the course of chapter two, the usefulness of resemblance was considered and it was found that resemblance is an effective grouping mechanism. In the third chapter, the problems of the individuation of substances and the problem of order were examined and it was determined that binding tropes should be accepted as the individuators of substances and that space-time (taken as a real entity) should be accepted as part of a solution to the problem of order. Hence, at this point a two-category ontology is being endorsed which consists of tropes (including binding tropes) and space-time.

This chapter is again focused on tropes. The claims that there are properties in the metaphysical sense and that these properties are particulars (tropes) will be defended. The chapter begins with a (brief) reconsideration of the arguments from chapter two in the context of providing support for the claim that tropes should be accepted. The positive arguments for accepting tropes are followed by several sections in which trope theory will be defended from various criticisms and objections. Finally, a variety of other issues, such as the relation between predication and tropes, will be considered.
4.2 Why Accept Tropes?

Occam's Razor enjoins philosophers not to admit entities into their ontologies without good reason to do so. It is also true that philosophers need to motivate and defend the acceptance of the ontological entities they postulate.\(^\text{169}\) If an adequate motivation cannot be provided for the admittance of an entity or an adequate defense given for its acceptance, then it would be reasonable to reject such an entity. Given this principle, which has been consistently followed throughout this work, adequate motivation and defense of the acceptance of tropes needs to be provided if tropes are to be accepted.

Earlier, class nominalism and resemblance nominalism, which attempted to provide ontologically economical solutions to the problem of universals, were considered. Each of these theories is an attempt to provide an adequate grouping mechanism without using properties in the metaphysical sense. As was noted, each of these theories has an initial advantage over property-based theories because the two theories have a sparser ontology (at least initially). However, as was argued in chapter two, it turns out that the ontological economy of these theories turns out to be a false one, for neither has the resources to solve some very basic grouping problems. Further, these theories were also found to suffer from other defects. In both cases it was concluded that it was the fact that neither theory involves properties that precluded them from solving the grouping problems. It was determined, however, that theories which included properties were able to easily handle the grouping problems. Given these results, it was concluded that any adequate solution to the problem of universals would need to involve properties in the metaphysical sense. Hence, the failures of the two property denying theories considered\(^\text{170}\) and the success of property-accepting theories serves to motivate the acceptance of properties.

\(^{169}\) See the appendix of this work for a discussion of methodology.

\(^{170}\) Which are, by the way, the two most plausible of existing proposed solutions to the problem of universals. See the first few chapters of D.M. Armstrong, *Universals & Scientific Realism Volume I*. 
Of course, the failings of class nominalism and resemblance nominalism only serve to motivate the acceptance of properties in general and not tropes specifically. Because of this, two competing accounts of properties were examined: properties as transcendent universals and properties as immanent universals. In the case of transcendent universals, it was found that placing properties in a special realm of their own, outside of space-time, generated severe difficulties. Because of these difficulties, it was concluded that it would be more reasonable to place universals within space-time (and whatever other dimensions there may be\footnote{This clause has been added so as not to beg the question against those who accept properties that do not exist within three dimensional space.}). These immanent universals were found to suffer from severe difficulties of their own. Since these difficulties stemmed from the fact that these properties were taken to be universals and not particulars, it was concluded that it would be reasonable to take properties to be particulars. Of course, it remains to be seen whether or not trope theory suffers from defects that would make it more reasonable to accept some other proposed solution to the problem of universals.

4.3 Armstrong's Swapped Tropes Objection

In Universals, Armstrong presents the following problem for the trope theorist.

Suppose that \(a\) has the property \(P\) but not \(Q\), while \(b\) has \(Q\) but not \(P\). It makes sense, in general, to claim that \(a\) might have had \(Q\) instead of \(P\) and \(b\) \(P\) instead of \(Q\). But

Suppose now that we are dealing with property tropes, and that the two tropes involved, \(P'\) and \(P''\), resemble exactly. Since the two tropes are wholly distinct particulars, it appears to make sense that instead of \(a\) having \(P'\) and \(b\) having \(P''\), the two tropes should have been swapped.

But this is a somewhat unwelcome consequence. The swap lies under suspicion of changing nothing. And now we notice that given a universals analysis, with \(a\) being \(P\) and \(b\) being \(P\), there is nothing to change. You cannot swap an entity, the universal property \(P\), with itself. One up to universals.\footnote{D.M. Armstrong, Universals, Boulder: Westview Press, 1989, p. 132.}

Armstrong's argument seems to be the following: If \(a\) changes properties, then \(a\) changes. But, if the change of properties is a swap of exactly resembling tropes, then \(a\) will not

change. This is problem for trope theory since that theory implies that there is no change where there should be one. In contrast, a TU or IU theory has no difficulty here since a change of properties always entails a clear change in that which has those properties.

If it can be shown that a swap of exactly resembling tropes does, in fact, bring about a change, then Armstrong's objection can be avoided. A difficulty that arises when attempting to reply to Armstrong is that he fails to specify exactly what he means when he says "The swap lies under suspicion of changing nothing." Keith Campbell takes Armstrong to be arguing that trope theory "admits of a possibility, an alleged real alternative, which can make absolutely no difference to the world or what happens in it. Such alleged differences are spurious, and a theory which admits them is faulty," and this seems to be a reasonable interpretation. Given this interpretation, it needs to be argued that the swapping of exactly resembling tropes results in a non-spurious change which makes a difference in the world.

In order to argue for this claim, it is useful to begin with common intuitions regarding the swapping of concrete particulars. Consider, for example, two exactly similar watches, A and B, which have exactly similar batteries. Suppose that a person takes the batteries, a and b, from each watch and swaps them. In such a swap, there would be no qualitative change in the watches. In this case it would seem that there is a real difference because the watches are no longer the same as they were prior to the change. Further, there would be a real change in the causal order of the world. Prior to the

---

175 Perhaps the clearest example (to Macintosh computer programmers, at least) are cases in which program objects are duplicated. The objects are qualitatively identical, but numerically distinct. Since the objects are individuated by and can be identified by their ID numbers (which are unique), in program commands, swapping two exactly resembling program objects that are linked by their IDs to other parts of the program will result in the program running quite differently. Hence, such a swap will make a real difference.
176 In reality, there would be since it is extremely unlikely that any two batteries would exactly resemble one another. However, it is assumed that the batteries are exactly similar.
change, a powered A and after the change b is powering A. Such a change might even be noticeable. For example, if God exists, He would note the change in the world\textsuperscript{177}.

Now, it seems that if these intuitions are correct in the case of concrete particulars, they should hold in the case of tropes. This claim can be supported in the following manner. Imagine that only half of each battery is swapped. It would seem that if the swap of whole batteries involved a real change, then the swap of half of them would also result in a real change. So, it seems reasonable to accept that the swap of any exactly resembling particulars will result in a real change. Now imagine that a trope of each battery is exchanged. Since tropes are particulars, the swapping of two exactly resembling tropes would be a swap of particulars. Hence, if a swap of exactly resembling concrete particulars results in a real change, it would seem that the swapping of exactly resembling tropes also results in a change.

Since there can be no qualitative differences between exactly resembling particulars (of any kind), a swap of exactly resembling tropes could not produce a qualitative change. However, there would be changes of the sort that occur when concrete particulars are swapped. First, such an exchange would result in a change in the complex entities involved in the swap. After all, they would be different after the change. Such a change might even be noticeable. For example If God exists, then He would notice the swap. Second, there would be a change in the causal order of the world. For example, imagine that trope a occupies a certain causal role in the operation of battery A and trope b (which exactly resemble a) occupies a certain causal role in the operation of battery B. If a and b are swapped, the relevant causal processes in A will now be the result of b and...

\textsuperscript{177}It could be imagined, for example, that it is in God's plan that a certain battery be destroyed by Him at a certain time. Were this link swapped to the other watch, that watch would end up being in need of a new battery instead of the other watch on that fateful day. After all, God would easily be able to track the battery as it was swapped, for He (being omniscient) would notice the difference.
similarly for battery B. Hence, swapping exactly resembling tropes will result in a real change and Armstrong's objection fails.\textsuperscript{178}

It might be argued that this reply to Armstrong's objection begs the question. After all, the swapping of exactly resembling properties, A and B, only results in a real change on the assumption that the exactly resembling properties are exactly resembling tropes and not instances of the same universal.\textsuperscript{179} However, if this is the case, it certainly seems that the claim that the swapping of exactly resembling properties, A and B, will result in no change is also question begging. After all, this claim rests on the assumption that properties are universals. What should be concluded is that if properties are tropes, then swapping exactly resembling properties will result in a change and if properties are universals, then swapping exactly resembling properties will result in no change (since a universal cannot be swapped with itself). Thus, the issue of whether swapping exactly resembling properties results in a real change or not is one that is to be settled by determining whether trope theory or universals theory is more plausible. Hence, the swapped tropes objection does not tell against trope theory.

4.4 The Multiple Instance Objection

Armstrong \textsuperscript{180} advances an argument against trope theory which was later adopted by Moreland and given the name "The Multiple Instance Objection" by Campbell\textsuperscript{181}. This objection can be best presented as a variant of Armstrong's swapped tropes objection as follows: Since a substance can have many tropes as constituents, there does not appear to be anything that would prevent a substance from having two or more exactly resembling tropes as constituents. Now, consider the following situation. Suppose that substance S

\textsuperscript{179}In the case of universals, the only time "properties" A and B exactly resemble one another are when A = B.
has trope S1 as a constituent at T1 and that at T2 S has S1 and S2 as constituents (and that S1 exactly resembles S2). If S1 and S2 are both quantitative tropes (mass tropes, for example), then there is no problem with such multiple instances. This is because the additional S trope will result in a commensurate quantitative increase in the relevant attribute (for example, there would be an increase in the substance's mass). But suppose that the tropes in question are qualitative trope (for example, solidity tropes). If a substance has a single solidity trope, S1, then the substance is solid. Now suppose that a second, exactly resembling solidity trope, S2, is added to the substance at T2. The state of affairs of the substance being solid S1 at T1 and the state of affairs of the substance being solid S1 and solid S2 at T2 are distinct (since the states of affairs have different constituents) yet one might suspect that nothing has really changed since the substance was solid prior to the addition of the second trope and solid after the addition of the second trope. The universal theorist, in contrast, suffers no problem here. Since his universals are identical in all their instances, such a case can simply not arise. Score one for universals, as Armstrong would say. Fortunately, this argument can be replied to.

The problem that trope theory faces is that the addition of another exactly resembling trope to a substance brings about no qualitative change in the substance, even though it is generally assumed that the addition of a qualitative property to a substance will bring about a qualitative change in that substance. There are two main ways to attack this objection. The first is to argue that the addition of additional qualitative tropes to a substance will bring about a qualitative change in the substance. The second is to argue against the claim that there are multiple instances that do not make any qualitative difference. As was noted above, this difficulty does not apply in cases involving quantitative tropes. This is because, for example, the addition of a one kilogram mass trope to a substance that already has a one kilogram mass trope will result in a quantitative change since the substance will now have a mass of two kilograms.
In order to support the claim that the addition of additional exactly resembling tropes to a substance will result in a qualitative change in the substance, certain issues discussed in chapter three need to be reconsidered. In the course of solving the spectra boundary problem it was argued that spectra phenomenon are accounted for by the distribution and concentration of tropes across a spatial region. For example, the shades of gray in a linear fill produced by an ink jet printer are composed of black dots of ink on the white paper. In this case, the black dots of ink are analogous to black tropes and the unmarked sections of the white paper are analogous to white tropes. Now, suppose that there is an extended substance consisting of white tropes and black tropes. Suppose further that the black tropes have a distribution pattern such that the substance's surface areas are different shades of gray. Now, suppose that additional black tropes, which exactly resemble the black tropes that already help constitute the substance, are added to the substance. In this case, the gray areas to which the black tropes are added will become darker. Hence, the addition of the exactly resembling tropes will, in fact, make a qualitative difference. Therefore, the objection fails.

It may be replied that the addition of additional exactly resembling tropes to a substance will make no qualitative difference if these tropes were to exactly overlap the previously present tropes. For example, suppose the black tropes that were added to the substance previously described occupied the same exact locations as the original black tropes. In this case the substance would not undergo a qualitative change (namely the darkening of various areas of the substance) and the multiple instance objection would hold in this case. This objection may be called the "overlapping multiple instance objection." While it is tempting to claim that two exactly resembling tropes cannot occupy the same location (and thus avoid the multiple instance objection), there does not seem to be any principled way of supporting this claim (especially in light of a
discussion of a similar issue in chapter three). Hence, some other way has to be found to avoid the objection.

Both the multiple instance objection and the overlapping multiple instance objection rest upon the assumption that the addition of a qualitative trope (or tropes) to a substance will result in a qualitative change. In the cases in which the additional tropes do not overlap tropes they exactly resemble, it is reasonable to accept the claim. However, in the cases of overlapping multiple instances it does not seem reasonable to accept the claim. The following analogical argument is used to make the case. Suppose, for example, that the following principle where adopted: the addition of a coat of paint to an object results in a change in the object's color. In cases in which the paint added to an object is different from the current color of the object or the paint is added in places were it is not already present, then it is reasonable to expect a change in the object's color. However, in cases in which paint is painted over paint of the same color, no such change should be expected. Consider, for example, a piece of wood that has been painted blue. Now imagine that another coat of the blue paint is put over the first coat of paint, but no where else on the wood. While the addition of the paint does make some differences, it does not make any difference in the color of the object. Now, suppose that there is a substance which has blue color tropes as constituents so that the substance is blue. Imagine that a set of blue tropes, which exactly resemble the blue tropes that already help constitute the substance, are added to the substance so that each added trope occupies the same location of some other blue trope that was already present. It does not seem reasonable to expect any qualitative change in this case, if the analogy with the paint case holds. Since it is unreasonable to expect qualitative changes in cases in which qualitative tropes overlap exactly, the overlapping multiple instance objection fails.

It may be replied that while it is unreasonable to expect a qualitative change when exactly resembling trope overlap exactly, trope theory still faces a problem here. The
problem is that the addition of an exactly resembling trope adds a new entity to the substance and some change would have to occur. This argument is basically a variation of the swapped tropes objection, except in this case the exactly resembling tropes do not swap locations but one is added to the exact location as the original trope. In such cases, as has been argued, no qualitative change can be expected. However, the presence of a second (third, fourth, etc.) trope does make a difference. The first difference is, as was the case with the swapped tropes objection, the substance prior to the addition of the exactly resembling trope is not identical to the substance after the addition of the trope. This is because the substance after the addition has one (or more) new constituent than the substance prior to the addition. The second difference is that the additional trope (or tropes) gives the substance a "back up" trope. The presence of the extra trope (or tropes) makes a difference in the following sorts of cases. Imagine that substance A has one blue trope and that substance B has two blue tropes which exactly overlap. Imagine that the two substances are blasted by mysterious Q-radiation that has spilled over from an epistemology counter example experiment. This Q-radiation is such that it destroys only one blue trope of a substance. In this case, substance A will cease to be blue when the Q-radiation destroys its blue trope. However, substance B will not cease to be blue when the Q-radiation strikes, for it has two blue tropes as constituents. A second case in which having an "extra" trope will make a difference is in cases in which tropes are transferred. Substance A can only transfer one blue trope while substance B can transfer two. Hence, there is a real difference between A and B in this respect. Finally, in cases in which a substance has overlapping exactly resembling tropes an alteration in the distribution of the tropes could result in a qualitative change arising. For example, if one of the overlapping blue tropes of substance B were to change its location, then that area of the substance would not be blue. Hence, the presence of additional exactly resembling tropes that overlap the original tropes does make a difference and hence the objection fails.
It certainly seems that the multiple instance objection and the overlapping multiple instance objection fail to harm trope theory. Hence, these objections may be safely laid to rest.

4.5 Armstrong's Laws of Nature Objection

In chapter two it was briefly noted that one potential advantage in accepting immanent universals is that they can be used in an account of the laws of nature. In *What is a Law of Nature*, Armstrong argues that immanent universals are needed to provide an adequate account of the laws of nature. If accepting universals enable an account to be provided of laws of nature, this benefit may well outweigh the cost of accepting immanent universals. If this were the case, then trope theory may well have to be abandoned in favor of a theory that included at least immanent universals as laws of nature. Hence, Armstrong's arguments need to be countered.

Rather than become embroiled in the vast issues involved in discussing the laws of nature and inductive generalizations, a limited strategy will be adopted: the most serious defects in Armstrong's account of the laws of nature will be presented.

Before undertaking a more in depth look and criticism of Armstrong's view, a very brief summary of his position will be presented. More detailed accounts of various aspects of Armstrong's theory, including his symbolization, will be presented in the relevant sections in which those aspects are criticized. According to Armstrong, laws of nature are dyadic relations of necessitation which hold between universals. This relation is, according to Armstrong, not like logical necessitation since it is not reflexive, is not transitive, cannot be contraposed, and is not symmetrical. These laws are states of affairs, but unlike other states of affairs (which are thick particulars) they are universals. The instantiations of these laws are the positive instances which fall under the laws. All

---

184 Necessitation is discussed below.
laws serve to link a state of affairs where a particular has a certain universal with a state of affairs in which the same particular has an additional universal.

In addition to normal laws, Armstrong admits three other types of laws, all of which are universals. These laws are uninstantiated laws, functional laws, and irreducibly probabilistic laws. All true laws are instantiated laws. This is because laws are universals and Armstrong accepts only instantiated universals. Statements of uninstantiated law are taken by Armstrong to be counterfactuals about what laws would hold if certain conditions were the case. Functional laws are laws which govern other laws which are deducible from a functional law by substituting particular values for independent variables. Irreducibly probabilistic laws are constituted by a certain objective probability that the instantiation of one universal will necessitate the instantiation of another universals. Like all universals, these laws must be instantiated. This brief sketch will be filled out, where necessary, in the discussion that follows.

Van Fraassen's Problem of Inference

According to van Fraassen, there are two main problems that any account of laws of nature will suffer from. These two problems are the problem of inference and the problem of identification. Very briefly, the general idea behind these problems is as follows: The problem of inference is: "that it is a law that A, should imply that A, on any acceptable account of laws." One way to solve this problem is to take It is a law that A to be the same as It is necessary that A, and then simply appeal to the logical dictum that necessity implies actuality. The problem is specifying the ground of the necessity. In order to do this, the relevant facts about the world which serve to give 'law' its sense must be identified and this is the second problem, that of identification. If it is insisted that necessity is a primitive fact, then the problem of identification is solved (or, better yet,
avoided). "But then one cannot rest irenically on the dictum that necessity implies actuality. For 'necessity', now primitive and unexplained, is a mere label given to certain facts, hence without logical force- Bernice's Hair does not grow on any one's head, whatever the logic of 'hair.'"  

In the case of laws construed as universals, the problem of identification is determining which relation that holds between universals is the relation of necessitation and the problem of inference is determining what information the statement that one universal necessitates another universal provides in regard to what happens and what things are like. van Fraassen assumes, for the sake of argument, that Armstrong solves the identification problem and he focuses on the inference problem. van Fraassen's argument is as follows:

\[ (1) \text{N'} (a's \text{ being } F, a's \text{ being } G) \]

This \text{N'} is the necessitation relation which holds between states of affairs. The statement given in (1) is true iff \text{a's being F} necessitates \text{a's being G}. Since Armstrong requires that all universals be instantiated, for the statement in (1) to be true then it must be the case that

\[ (2) \text{a is } F \text{ and } G \]

However, it could be the case that \text{a is } F \text{ and } G while the statement given in (1) is false, so \text{N'} can not be a mere abstraction from states of affairs such as the one given in (2), otherwise \text{N'} would just be a conjunctive universal (F & G).

\text{N'} has various sub-relations, in the sense that determinable properties have determinate properties as sub-properties. One sort of sub-relation of \text{N'} is the relation of \text{necessitation in virtue of the relations(s) between } F \text{ and } G. This relation shall be referred to as \text{N'}(F,G):

\[ 188^{\text{as van Fraassen, }} \text{Laws and Symmetry, Oxford: Clarendon Press, 1989, pp. 39.} \]

\[ 189^{\text{as van Fraassen, }} \text{Laws and Symmetry, Oxford: Clarendon Press, 1989, pp. 105-107.} \]
(3) \( N'(F, G) (a's \text{ being } F \text{ a's being } G) \)

(3) is a particular instance of (1), so (3) entails (1) and also (2), but the converse entailments obviously do not hold. (3) States that one state of affairs necessitates the other and that this is so in virtue of the relation between the universals \( F \) and \( G \).

Therefore, what \( a \) is does not matter. However, (3) can not be generalized immediately to all objects since (3) is not conditional; it entails that \( a \) is both \( F \) and \( G \). Hence, what should be said is that what \( a \) is does not matter beyond the entailed fact that it is an instance of those universals whose relation is under consideration. Therefore, it may be concluded that if the statement given in (3) is true, then for any object \( b \) it is true that

(4) if \( b \) is (\( F \) and \( G \)) then \( N'(F, G) (b's \text{ being } F, b's \text{ being } G) \).

The relation, between \( F \) and \( G \) in virtue of which \( a's \text{ being } F \) necessitates \( a's \text{ being } G \) is the relation of necessitation between universals, which will be the relation designated by \( N' \):

(5) \( N'(F, G) \)

Hence, if (3) is true then (4) and (5) must be true and (3) must be true because (5) is true. But what, it may be asked, is the necessitation relation? Armstrong claims, as he does with multiple instantiations, that necessitation should simply be accepted and that "the inexplicability of necessitation just has to be accepted. Necessitation, the way one Form (universal) brings another along with it as Plato puts in the Phaedo 104D-105) is a primitive, or near primitive\(^{190}\), which we are forced to postulate."\(^{191}\) According to van Fraassen, the postulation of necessitation is due to the fact that the actual states of affairs of the world cannot determine whether (3) is true or false.

\(^{190}\)While van Fraassen does not make this point directly, the price paid in gaining the laws of nature advantage over trope theory is a primitive. This increases the cost of the universal theory relative to trope theory and, as van Fraassen shows, the universals account of laws of nature does not offer much in return for the price paid.

Armstrong goes on to identify a relation with a state of affairs (this will be clarified below). If doing so will lead to a logical inference from the existence of the universal N(F, G) to the conclusion that any F is G, then Armstrong will have solved the problem of inference. Armstrong seems to believe that he solves the problem for he writes:

It is clear that \textit{if such a relation holds between the universals}, then it is automatic that each particular F determines that it is a G. \textit{That is just the instantiation of the universal} \((N(F,G))\) \textit{in particular cases}. The [premise of the inference] represents the law, a state of affairs, which is simultaneously a relation. The [conclusion] represents the uniformity resulting from the instantiation in its particulars.\(^{192}\)

However, the inferential gap has not been closed as will now be demonstrated.

Armstrong's proposal is that the universal \(N'(F, G)\), which is a relation between states of affairs, is identical with the state of affairs \(N''(F, G)\). Thus, the superscripts can be dropped and it can be said that the state of affairs \(N(F, G) (Fa, Ga)\) instantiates the state of affairs \(N(F,G)\), in the same way that the state of affairs \(Rab\) instantiates \(R\). At this point, the question of whether or not \(N(F, G)\) entails \((If \ Fb \ then \ Gb)\), can be approached by logical means. Suppose \(N(F, G)\) is the case, so that F bears N to G. Then N (F, G) must (in accord with Armstrong's principle of instantiation) have at least one instance; let it be described by the statement given in (3). In this case, (4) will also be true. Hence, it can be concluded that if \(N(F, G)\) is the case, then for any object b, it follows that if b is both F and G, then \(N(F,G)(b's \ being \ F, b's \ being \ G).\) However, Armstrong can go no further:

What we have established is this: if there is a law \(N(F, G)\), then all conjunctions of F and G, in any subject, will be because of this law. There will be no F's which are only accidentally G...However, this benefit is not great enough to get him out of the difficulty at issue. For what \textit{cannot be deduced}, from the universal quantification of (4) is that all F's are G's. Any assertion to that effect must be made independently. Nothing less than a bare postulate will do, for there is no logical connection between relations among universals and relations among their instances...For me, the above argument establishes that the inference problem remains unsolved.\(^{193}\)


Thus, Armstrong's account of laws of nature does not solve the problem of inference. Because of this, it is unlikely the fact that accepting universals enables an account of laws to be given provides a good reason to reject tropes in favor of universals\(^ {194}\).

**van Fraassen's Criticism of Probabilistic Laws**

Consider an example of what might be taken to be a case of irreducible probability, namely that of radioactive decay. The probability that a single atom will remain stable for a length of time \( t \) (depending on \( A \), which is the decay constant) is: \( e^{-At} \). If there is a law governing the decay of atoms, then this law would be an irreducibly probabilistic law. This law would be:

1. Each single atom has a probability of \( e^{-At} \) of remaining stable for a length of time equal to \( t \).

This sort of law will be the test case for Armstrong's account of probabilistic laws.

The task that Armstrong accepts in his account of laws is providing an analysis of such laws in terms of universals and accounting for the objective probability involved in such laws. Armstrong begins his work by presenting an irreducibly probabilistic law such that there is a probability \( P \) of an \( F \) being a \( G \). Suppose that \( G \) is, as van Fraassen assumes, remaining stable for at least a year, or else, decaying into radon within the course of a year's time. Using his standard notation, Armstrong would present such a law, namely (1), as follows:

2. \((\Pr(P)(F, G) > (a's \ being \ F, a's \ being \ G)\)

This should be read, for now, as *There is a probability, \( P \), in virtue of the universals \( F \) and \( G \), of an individual \( F \) being a \( G \).* (Pr:P)(F, G) is a universal relation which can hold between states of affairs. Suppose that \( a \) is \( F \) but not \( G \). Then (2) is not true, for in this

\(^{194}\)Various other accounts involving universals as laws of nature, such as those given by Dretske and Tooley, fare even worse than Armstrong's (see Bas van Fraassen, *Laws and Symmetry*, Oxford: Clarendon Press, 1989, pp.94-103). This is not surprising since Armstrong has the most fully developed universal based account of laws of nature.

case there is no state of affairs in which \( a \) is a \( G \). This is due to Armstrong's rejection of uninstantiated universals. Hence, (2), suitably generalized, does not say something true about any \( F \), but only those which are \( F \) and \( G \). However, this is not what the original statement of the law looked like. On Armstrong's view it is the case that a statement of probabilistic law is a universal (a real law) only in cases in which the probability is "realized" (in cases in which the law is instantiated). This is because Armstrong rejects uninstantiated universals.

That (Pr:P) \((F,G)\) is the case has an obvious consequence: since a universal cannot be the case without being instantiated, it follows that there is at least one \( F \) which is \( G \). This yields, for example,

(3) If it is a law that there is a probability of \( \frac{3}{4} \) of an individual \( F \) being a \( G \), and there is

only one \( F \) then it is definitely a \( G \).\(^{196}\)

This is a bit of a problem. Suppose that there are two \( F s \), namely \( a \) and \( b \). If Armstrong's principle of instantiation is ignored and it is assumed that this (the law that there is a probability of \( \frac{3}{4} \) of an individual \( F \) being a \( G \)) is the only relevant law, the probabilities are as follows: the probability that \( a \) and \( b \) are both \( G \) is \( \frac{9}{16} \), the probability that \( a \) alone (or \( b \) alone) is \( G \) is \( \frac{3}{16} \), and that neither \( a \) nor \( b \) are \( G \) is \( \frac{1}{16} \). However, the principle of instantiation eliminates the last possibility, that of \( a \) or \( b \) both failing to be \( G \). So, on Armstrong's view, the probability of neither \( a \) nor \( b \) being \( G \) is 0. The other probabilities have to be readjusted, since the sum of the various probabilities must add up to 1. The recalculation of the other probabilities yields the following result:

(4) Given the law that there is a probability of \( \frac{3}{4} \) of an individual \( F \) being a \( G \), and

\( a, b \) are the only two \( Fs \), then the probability that \( a \) is a \( G \) equals \( \frac{4}{5} \), and the probability that \( a \) is a \( G \) given that \( b \) is a \( G \) is a bit less (namely, \( \frac{3}{4} \) again).\(^{197}\)


Thus, provided there are a finite number of Fs, then if the law states that there is a probability $P$, and there are $n$ Fs, then the "the probability that a given one will be G equals $P$ divided by $(1-(1-P^n))$. For very large $n$, this is indeed close to $P$, but the difference would show up in sufficiently sensitive experiments. Should we recommend this consequence to physicists, if they ever have to explain apparent systematic deviations from a probabilistic law?" Clearly, we should not and Armstrong's account of probabilistic laws is lacking.

Two additional, rather interesting and problematic results of Armstrong's account of probabilistic laws are as follows. First, the second part of (4) indicates the following:

According to van Fraassen,

the difference between the probability of $b$ being G tout court, and its probability given that $a$ is $G$ amounts to a statistical correlation. Now today's physics countenances such 'uncaused' correlations, though not one's arising simply from numbers present, so to say. A correlation without preceding interaction to account for it is always prima facie mysterious, and I note it as an interesting feature of Armstrong's account.\(^{199}\)

While van Fraassen does not make these points, this is an apt place to make them: As will be shown later, Armstrong places a great deal of stock in science. Hence, this result is not a welcome one for his theory. Further, this additional mystery will increase the cost of his theory and therefore cut into any advantage that may be claimed over tropes theory in this area.

Second, in the case of certain laws which give distinct probabilities for each time-interval, such as the law of radon decay which was presented above, there are rather odd results. That this is the case is indicated by the example of radioactive decay. Since Armstrong does not accept negative universals, his law governing radioactive decay will involve either the universal (R)remaining stable for interval $t$ or the universal decaying into radon within interval $t$. (D). If the universal is R, then $e^{-At}$ is positive for each $t$. So,

---


for each $t$ there must be an instance of $R$ such that there is an atom that remains stable for $t$ starting from now. So, there is either an atom which will never decay, or there is an infinite series of atoms which stay stable for at least one year, at least two, years, and so on. If the universal is $R$, then there must be for each $t$ an atom which decays at $t$ (measuring from right now). So, there is either an atom which decays right now, or there an infinite series of atoms which decay respectively before two years, three years, and so forth has elapsed. However, for there to be, at each instant of time, an atom that decays, there would need to be an infinite number of atoms. If there is only a finite number of atoms in the world, which seems to be the case, then there must be at least one atom which will never undergo decay to radon. While a specific example was used, this argument can be generalized so that it applies to any law which marks out objective probabilities as a positive function of time. Needless to say, this is a rather odd result and adds to the cost of Armstrong's theory.

Problems with Functional Laws and Uninstantiated Laws

Before discussing functional laws and uninstantiated laws, some aspects of Armstrong's theory need to be presented. As has been noted, Armstrong is a realist about universals and only countenances instantiated universals. He also holds to the doctrine of actualism. On this view, there are only actual particulars and universals and are no possible entities of any kind. The truth value of any modal claim must be grounded on the actual properties of the objects involved. The main idea behind the argument that will be advanced in this section is as follows: First, Armstrong's accounts of functional laws and uninstantiated laws require him to accept determinable universals. Second, Armstrong's acceptance of determinables is ad hoc. Third, there are very good reasons to reject determinable universals. Therefore, Armstrong's account of laws is problematic in regards to functional laws and uninstantiated laws.
Functional laws are discussed in chapter seven of *What is a Law of Nature*. Briefly, a functional law is a law that is manifested by the following sort of uniformity: "Let P and Q be distinct variable magnitudes, and f be some functional constant...:\n
\[(x)(P) (Px \rightarrow (EQ)(Qx & Q = f(P)))\]  

An example of such a law, where P is temperature, Q is volume, and x is a gas would be: for all gases and all temperatures, if a gas has temperature P, then that gas will have a volume that is a function of its temperature. A functional law with an uninstantiated value occurs, using the above as an example, when there is some value, say P₀, that is omnitemporally never instantiated. In the gas example, this would involve there being a volume and a temperature that no gas ever has.

The possibility of such uninstantiated values creates a problem for Armstrong: by hypothesis, P₀ is never instantiated. Hover, f(P₀) has a determinate value which is property Q₀. Given Armstrong's account of laws, N (P₀, Q₀) is a law and hence a universal. However, it is, by hypothesis, an uninstantiated law and therefore an uninstantiated universal. Since, for Armstrong, all universal are instantiated, he cannot accept the P₀ law. However, if the functional law is a real law, then the P₀ law must also be a real law, since if there were P₀s the functional law would encompass them.

Since he rejects uninstantiated universals, Armstrong needs an account of functional laws which does not make use of them in order to address the difficulty presented above and he offers the following proposal:

The view which I wish to put forward is that a statement of uninstantiated law should be construed as a counterfactual...Statements of uninstantiated law are really only statements about what laws would hold if, contrary to fact, certain universals were instantiated, that is, existed. I thus admit uninstantiated laws, but only as logically secondary cases of laws.²⁰¹

Armstrong's actualism requires him to ground his counterfactuals on the constituents of this world. In order to do this, Armstrong must cast functional laws as follows:

What we have rather is \( N(\text{being a P-type property, being a Q-type property such that } Q = f(P)) \). It can be shortened to \( N(P, a Q \text{ such that } Q=f(P)) \). This second-order state of affairs will also be a second order dyadic universal..., and its instances will be pairs of first-order universals of which the first member is an instance of P and the second member is the appropriate instance of Q. The instances of the law will thus be first-order laws of nature. The account is parallel to that given in \( N(F,G) \), but with everything moved up one order.202

What this solution requires is determinable universals. The class of P-type properties (as well as the class of Q-type properties, etc.) would be a class of determinate universals. In this case, being a P-type property would be a determinable universal and this determinable would serve to group its determinates (the various Ps). Armstrong ultimately concludes that if he is going to provide an account of functional laws within the context of his theory of universals, "the most hopeful line seems to argue for higher-order universals corresponding to some determinable universals viz. those required for functional laws."203

In chapter eight of What is a Law of Nature, Armstrong considers the various cases Tooley presents which purport to show the need for uninstantiated laws. These are laws which involve such things as particles that could interact, but never actually do, and emergent, simple properties that could, but never actually do, emerge.

In order to handle such cases, Armstrong applies his counterfactual-grounded-in-the-actual method once again. For example:

For the emergent properties case we have the following sketch of a higher-order law. It is a law concerning a certain range of complex properties that, if objects have a certain sort of conjunction of properties in this range, then it is a law that they have certain emergent simple properties, a different simple property being associated with each different conjunction.204

---

In this example, the determinable would be "a certain range of complex properties..." and "a certain sort of conjunction" and "certain emergent properties." It is clear, then, that determinables are required for Armstrong's accounts of functional laws and uninstantiated laws.

The main problem with Armstrong's proposed solutions to the difficulties presented above is that he makes use of determinable universals. The first problem is that there are very good reasons to reject determinables. and the second problem is that Armstrong's acceptance of universals is ad hoc. Arguments for the rejection of determinable are given below. Many of these reasons are, in fact, arguments presented by Armstrong himself.205 Because there are good reasons to reject determinables, there are good reasons to reject Armstrong's proposed solutions to the difficulties that his accounts of functional laws and uninstantiated laws face. Support for the second claim is as follows.

Armstrong is committed to a version of Plato's mark of being principle, which Armstrong draws from the Sophist (247d-e):

I suggest that anything has real being, that is so constituted as to possess any sort of power either to affect anything else or to be affected, in however small a degree, by the most insignificant agent, though it be only once. I am proposing as a mark to designate real things, that they are nothing but power.206 Armstrong uses this mark of being principle in many ways which are essential to his theory. He use the mark to determine what is to be admitted into his ontology. The idea is that accepting the mark of being

...Involves rejecting transcendent universals, realms of numbers, transcendent values, timeless propositions, non-existent objects ("the golden mountain"), possibilia, possible worlds, and "abstract" classes.

A general argument is given against postulating any of these entities. They all lack causal power: they do not act. It is then argued that we have no good

reason to postulate anything which has no effect on the spatio-temporal world. Armstrong also uses this causal argument in *Universals & Scientific Realism* and in *Universals* against various forms of nominalism. The general nature of the argument is that nominalist theories cannot provide an adequate account of how properties are causally efficacious, so these theories are implausible and should be rejected. For the purpose of the argument to come, it is important to note that the mark of being principle excludes entities that lack causal efficacy from Armstrong's ontology and that this principle is so central to Armstrong's philosophic methodology that it is unlikely to be abandoned (and cannot be abandoned without radical alterations in Armstrong's philosophic position).

Now, consider determinable universals. Do they seem to have causal efficacy? Suppose that there is a particular, a, with the determinate property of having a mass of two kilograms. Because of this property, a has the capacity to act and be acted upon. For example, it can tip scales, hold down papers, and so forth. Now, does the determinable property of having a mass add any causal power to a? It would seem not. After all, what causal powers would it gain over and above those it already has? It would seem that determinables are not causally efficacious and hence, by Armstrong's own standards, they should be rejected.

In addition to the role the mark of being plays in Armstrong's rejection of various entities and his attacks on various forms of nominalism, Armstrong also uses the mark of being principle to exclude disjunctive and negative universals from his ontology. His rejection of these universals is particular enlightening: "there is some very clear link

---

between universals and causality. If a thing instantiates a certain universal, it has the power to act in a certain way. For instance, if a thing has a certain mass, then it has the power to act upon the scale pan or upon scales in a certain way.210 Because Armstrong holds that disjunctive universals and negative universals lack causal power, he rejects them.211 What is important about the quote is the word 'certain': particulars act in virtue of having a certain property, in this case a certain mass, which is a determinate property. There is no mention of determinable getting in on the act, which indicates that they are causally inert and hence should be rejected along with disjunctive and negative universals.

If determinables are causally inert, which they certainly seem to be, then Armstrong cannot admit them into his ontology in a principled manner without reject the mark of being. If he admits them without abandoning the mark of being, then the admission would be inconsistent with the rest of his theory and their admittance would be ad hoc, since determinables are admitted solely to save the theory. If Armstrong were to abandon the mark of being, the results would be disastrous, given the important work it does for him. Further, if the mark of being were abandoned, it would be difficult for Armstrong to deny ontological status to uninstantiated universals. But, if uninstantiated universals are admissible, the they can be used to handle cases of uninstantiated values in functional laws and uninstantiated laws, thus rendering determinables unnecessary. Thus, it seems that Armstrong cannot avail himself of determinables in a non ad hoc manner without abandoning his current position. In light of these results, it would seem that Armstrong can salvage his functional and uninstantiated laws by accepting determinables.

Given the various arguments against Armstrong's account of laws of nature, it is reasonable to accept that there is no advantage to be gained over trope theory by accepting immanent universals. This is because universal based accounts of the laws of nature are extremely problematic, mysterious in many areas, and require the acceptance of additional primitives which are not required by trope theory. Hence, trope theory retains its position of superiority over theories involving immanent universals, even (or perhaps especially) those which include a laws of nature account.

4.6 Hochberg's First and Second Arguments

In his paper "A Refutation of Modest Nominalism" presents four attacks against trope theory. In this section the first two attacks will be addressed. Hochberg claims, first, that trope theory has an (apparent) advantage of economy over substratum-universal accounts, such as Armstrong's. An account involving both particulars and universals requires a special tie, that of exemplification or instantiation, which serves to bind universals to their particulars. Trope theory, in contrast, requires only the tropes as well as the tie of resemblance that holds between them. Hence, whereas a universal account requires three basic categories (particulars, universals, and instantiation), trope theory requires only two (tropes and resemblance) and gains an advantage of ontic economy. Hochberg goes on to argue that this apparent ontic economy is spurious, primarily because it is achieved only by giving one type of entity (the resemblance tie) a two fold function. Instantiation serves to connect particulars and universals, and that is all it does. The resemblance tie, in contrast, serves to yield "resemblance facts" about tropes, but also "supplies the qualitative content." When Hochberg claims that the resemblance tie "supplies the qualitative content", he is claiming that a trope is what it is in virtue of its resembling some other trope. In short, Hochberg is taking the trope theorist to be giving

---

the same answer to two distinct sub-problems of the problem of sameness. The first problem is the problem of what it is for any two tropes \( a \) and \( b \) to be of type \( F \). The trope theorist is correctly taken by Hochberg to answer this question in terms of \( a \) and \( b \) resembling one another. The second problem is the problem of what it is for a single trope \( a \) to be \( F \). Hochberg incorrectly, as will be argued below, takes the trope theorist to answer this question in terms of \( a \) resembling some other trope.

There are two main replies to the criticism that trope theory has only an apparent but not actual advantage of economy over a theory involving universals. First, it is not the case that the resemblances that hold between tropes is an entity. It was argued at some length in chapter two that resemblance is an NE-relation and not an EN-relation. Further, it was also argued in chapter two that the universal theorist's relation of instantiation (in both immanent universal and transcendent universal theories) is an EN-relation. Hence, trope theory has an actual, non-spurious advantage over universal accounts. Second, Hochberg is wrong when he claims that the resemblance relations supply the qualitative content. In chapter one, the distinction between what it is for two tokens to both be of type \( F \) and what it is for a token to be \( F \) was clearly made. According to the trope theory being defended, for two \( F \) tropes to be \( F \) is for them to resemble one another because of what they are. For a trope to be \( F \) is for it to be what it is, namely \( F \), and not for it to resemble some other \( F \). So, the resemblance relations among the \( F \) tropes hold in virtue of the fact that those tropes are \( F \) and not the other way around. Hence, resemblance does not have a dual role in the trope theory being defended and Hochberg's charge that the economy of trope theory is spurious because resemblance has two functions has been avoided.

Hochberg's second attack is that trope theory cannot provide an adequate account of relations because the trope theorist can only accept particular instances of properties and relations and such instances must be localized in space-time:
But, clearly it is absurd to think in terms of localizing spatial and temporal relations in space and time. Aside from such obvious and special cases, it is equally absurd to think of locating relations within the particulars that 'stand' in them, as the medievals well knew. Consider the relation 'loves' and the truth, let us assume, that Othello loves Desdemona. On the moderate nominalist's view, there must be a relation instance, loves \textit{loves}, say, which is not only exactly similar to the other instances of loving, but is 'related to' Othello and Desdemona. But how? As a relation it cannot be 'contained' in Othello or in Desdemona, for then there would be no 'connection' to the other term of the relation.\textsuperscript{214}

This argument contains two parts: the first is the difficulty of localizing spatial and temporal relations, the second is the difficulty of location of "relations" within the entities related. These difficulties will addressed one at a time.

The gist of the first part of the objection is that since it is absurd to locate spatial and temporal relations in space-time, trope theory is defective in this respect. The reply to this attack is as follows. On the realist view of space-time which was endorsed in chapter three, spatial and temporal relations are not tropes, because space-times and the arrangement of entities within space time are not tropes. Hence, there is no need to localize spatial and temporal relational tropes because there are none. What then, are spatial and temporal relations? Spatial and temporal relations are, on the view being defended, special sorts of NE-relations. For an entity A to be five miles away from another entity B is for there to be five miles of space between A and B. Once A and B have the spatial locations they do (for whatever reason), they will be a certain spatial distance apart. Hence, there is no need to postulate an additional entity over and above A,B, and space. To do so would involve no theoretical gain and would involve an unnecessary increase in the cost of the theory. Hence, no such further entity should be postulated. A similar sort of argument can be given in the case of temporal relations and a version of this argument is developed below. Thus, once a realist account of space-time is

adopted (and space-time is taken to be other than a trope), the first part of Hochberg's argument fails.

The second difficulty that Hochberg raises within this objection is that by locating relations "within" the related entities, the required "connections" between related entities is lost. However, this is not the case. Consider a relation such as taller than. It was argued in chapter two that this sort of relation is a NE-relation. After all, if Bill is six feet tall and Sasha is five feet tall, it is the fact that Bill has the height he does and the fact that Sasha has the height she does that accounts for the fact that Bill is taller than Sasha. Hence, there is the required "connection" between Bill and Sasha, even though this "connection" is not anything over and above the heights that Bill and Sasha each have.

This sort of argument can be generalized to cover other relations such as smarter than, resembles to a greater degree than, is the twin brother of, and so forth.

In Hochberg's example of love, the situation is a bit less clear, since it involves an intentional, emotional state. While a full account of such relations would go far beyond the scope of this work, the following brief sketch can be offered. It seems reasonable to accept the claim that A can love B even in cases in which there is, in fact, no B. For example, it is reasonable to believe that the ancient Greek priests of Athena loved their goddess, even though she did not exist. Further, it is also reasonable to believe that there are cases in which A loves B, and then B ceases to be, but A still loves B. For example, suppose Bill loves Sasha. Sasha goes on a trip and is killed, but Bill does not know this and he keeps loving Sasha after she is no more. The point of these examples is that love is probably not an EN-relation. This is because if love were a dyadic, EN-relation it would require the existence of a lover and the loved entity, and then one could not love something that did not exist or love someone that died (assuming that there is no afterlife, of course). While it can be claimed that "true love" is a dyadic, metaphysical entity that serves to connect a lover and the loved entity, this seems absurd. Of course, the fact that
love is "directed" at something has not been accounted for and providing such an account would require an account of intentionality, which will not be provided here. However, there seems to be no good reason to accept the claim that intentionality can only be accounted for in terms of unlocalizable universals and that it is beyond the resources of trope theory.

While every possible relation can not be examined, it has been shown that it is reasonable to believe that trope theory can provide adequate accounts of relations, including the "connection" between related entities. Unless a relation can be found that is clearly an EN-relation that trope theory cannot in principle handle, this particular aspect of Hochberg's attack cannot harm trope theory.

Finally, the universal theorist (and Hochberg is a universal theorist) suffers from a similar problem here. If relations are universals, they can either be instantiated or uninstantiated. If they are instantiated, then their instances must have definite spatial and temporal locations (since that is what it is to be instantiated). If so, then the universal theorist is in the same bind as the trope theorist. To be more precise, if they relations are instantiated universals, then the universal theorist also faces the problem of locating relations. So, if the objection holds against tropes, it must also hold against instantiated (and hence localized) relational universals. Hence, the universals theorist can claim no advantage here. If relations are unlocated universals, then they would be uninstantiated universals and would suffer all the difficulties associated with such universals. Of course, should a trope theorist be foolish enough to do so, he could claim un instantiated tropes in place of the universal theorist's uninstantiated universals. If the universal theorist claims that there can somehow be unlocated, but instantiated universals, the trope theorist can help himself to unlocated, but instantiated tropes. This is because trope theory is committed to the claim that if there are relational tropes, then they are particulars and not to the claim that relational tropes must have spatial and temporal locations. Hence, it is
concluded that relations are no more problematic for trope theory than they are for universal theories.

4.7 Hochberg's Third and Fourth Arguments

Hochberg's third argument is that because trope theory is committed to recognize entities which function like universals, trope theory is a universal theory in all but name.215 His argument for this claim is as follows. The trope theorist needs to specify truth conditions for Fa. If the trope theorist does this by referring to a paradigm F, then the trope theorist is required to specify the truth conditions for the paradigm F being F and these specifications will be trivial or circular (where f is the paradigm F trope):

'f is an instance of F' is true iff f exactly resembles f.

Hence, the trope theorist must find another way to specify the needed truth conditions.

Hochberg claims that the trope theorist needs to appeal to the sum of instances of F and hold that the truth condition for 'a is F' is that there is some trope b which is had by a and b is a member of the sum of the F tropes. Laying aside concerns about what it is about the sum in question that makes it the F sum and what it is to be a member of the sum, what Hochberg is trying to argue is that the sum of Fs is so much like a universal that the trope theorist is a universal theorist in all but name.

There are the following replies to Hochberg's argument. First, as Keith Campbell argues, trope theory of the sort being defended (which involves tropes with definite natures of their own), does not require paradigms or sums in its specification of the truth condition of 'a is F':

'a is F' is true iff a contains an F trope.216

Further, an F trope is F if it is F:

Trope $t$ is $F$ is true iff $t$ is $F$.\textsuperscript{217}

Hence, even though (as Campbell notes) the trope theorist recognizes the mereological sum of the $F$ tropes, it plays no role in the account of what it is to be $F$. Therefore, Hochberg's argument does not show that the trope theorist is forced to accept sums which function as universals. Hence, the argument fails.

Finally, the important difference between the sum of $F$ tropes and the universal $F$ is that the sum of $Fs$ is not wholly present in each $F$ while the universal $F$ is, by hypothesis, wholly present in each $F$ instance. It is the fact that universals can be multiply located and tropes can not be so located that serves to clearly distinguish the trope theory from universal theory. Thus, while a resemblance class of tropes can function as an ersatz universal (as will be argued in chapter five), trope theorists are not universal theorists in all but name.

Hochberg's fourth, and most powerful argument, is the problem of relational order.\textsuperscript{218} Hochberg's claim is that ordering relations need to be recognized in any adequate analysis of relational facts and unless these ordering relations are universals, then the problem of relational order cannot be solved.

In the case of dyadic, asymmetrical relations (there are no problems of order with symmetrical relations) there is a difference between being the first term of the relation and the second term. For example, A being taller than B is quite a different matter than B being taller than A. According to Hochberg in order to mark the difference, where $R$ is an asymmetrical relation, between $aRb$ and $bRa$ the fact that $aRb$ requires the components $a$, $R$, $b$, their combination into a relational fact, as well as an additional fact, namely that $a$ is the initial term in the relation or $b$ is the second term in the relation.

To account for such ordering facts, Hochberg offers the following: let 'a[..]' stand for the ordering fact that a is the initial term of the asymmetrical relation aRb. Hochberg argues that no regress threatens the universal theorist here. This is because the difference in logical kind between the simple term a and the complex marked by '[..]' implies that there is no need for yet another additional ordering fact to determine that a and not [..] stands in the initial position in a[..].

However, what if all the participants in the relation are of the same logical kind, namely universals? Suppose, following Keith Campbell, that there is a situation involving one relational universal (rl) being instantiated before another relational universal (r2). Let 'R' stand for the asymmetric relation instantiated before. So, the case given is rlRr2 which needs to be distinguished from r2Rrl which has the same constituents. As was done in the earlier case, rlRr2 is distinguished by asserting that l is the initial term in the relation: rl[R rl, r2]. But, will this work? It does not seem so. Consider Hochberg's attack on the trope theorist.

Using the example given above, but replacing the universals with tropes, the following version of Hochberg's argument can be given. For rl, r2 and R to constitute a relational fact, they need to be connected. So, where '[..]' designates (rl, earlier than, r2) and C is the connection, the relational fact is C[..]. Since this fact is different from (r2, earlier than, rl), it must be asserted that rl is in the initial place by specifying that rll[..]. However, l (the is the initial term of relation) must be a trope itself, so the relational fact rll[..] thus involves the connecting together into one fact rlll and [..] to yield the fact C(rlll[..]). In this case ll is an individual trope of type I (is the initial term of). The problem is that both rl and ll are particular instances of relations and hence of the same logical kind. Hence, they can fill the same places in structures such as C(rlll[..]). Hence it must be specified which slot each trope fills: rll{C(rlll[..]). But, in this fact I will be an

individual relational trope of type I and the regress is generated all over again. Because of this, Hochberg considers the regress fatal to trope theory.

However, what Hochberg fails to notice is that if the regress is fatal to trope theory, it is also fatal to the sort of universal theory which Hochberg endorses. If universals are substituted for tropes in the argument just given, the regress will also arise. This is because I will be a universal just like \( r_1 \) and they can fill the same places in structures such as \( C(r_1|[..|) \) and any attempt to specify which slots they fill will generate the same sort of regress that Hochberg takes to be fatal to trope theory. While it is of some comfort to the trope theorist that the universal theorist suffers from the regress, it would be better for the trope theorist to find a way to avoid the problem.

In the case of the sort of asymmetrical EN-relations the trope theorist accepts, the following argument can be given in reply to Hochberg. Suppose that trope \( a \) occurs five minutes before trope \( b \). On a realist view of space-time accepted by the theory being defended, this fact is accounted for by the fact that \( a \) occupies a certain place on the temporal dimension and that \( b \) occupies another place on that dimension. Using a simple linear model of time, \( a \) would occupy point \( t \) on the time line, whereas \( b \) would occupy a point \( t+5 \) minutes. Since space-time is not a trope, it is of a different logical kind than \( a \) and \( b \). Therefore the asymmetry of the location relation is accounted for without any danger of a regress. This is because while \( a \) can occupy a temporal location, a temporal location cannot occupy \( a \). Once \( a \) and \( b \) are located, their locations determine their temporal order. \( a \)'s being at temporal position \( t \) and \( b \) being at temporal position \( t+5 \) minutes is quite distinct from \( b \)'s being at temporal position \( t \) and \( a \) being at temporal position \( t+5 \) minutes and the existence of \( a \), \( b \) and the temporal dimension is enough to account for the distinction. Hence, there is no need of a further ordering entity beyond \( a \), \( b \), and the temporal dimension to account for \( a \) occurring before \( b \). This example can be made more complicated by introducing temporal relations between temporally related
entities. For example, \((a \text{ occurs before } b) \text{ occurs before } (c \text{ occurs before } d)\). While such cases would be more complex, they can be worked out in the same manner as the simple case considered above. Thus, Hochberg's regress cannot take place. As long as one is willing to be a realist about dimensions, these dimensions can be used to account for the ordering of entities. Since they are ontologically distinct from the entities that occupy them, the regress is avoided in all such cases. Since there are good reasons to accept the existence of such dimensions (at least the spatial and temporal dimensions), this option is viable. Of course, it is a viable option for both the universal theorist and the trope theorist.

In the case of asymmetrical NE-relations, the regress also fails to arise. Take a case such as \(a \text{ is larger than } b\). Suppose that \(a\) is this letter: A and that \(b\) is this letter: b. What is it for \(a\) to be larger than \(b\)? It would simply seem to be that \(a\) has the size it does and \(b\) has the size it does. Once \(a\) has the size it does, namely one that is bigger than that of \(b\), it follows that \(a\) will occupy the first term of the relation \(a \text{ is taller than } b\). After all, is it reasonable to believe that some rather mysterious metaphysical entity, over and above the ink and its arrangement that composes the letters mentioned above is required to account for the fact that this A is larger than this b? It certainly does not seem, so. The asymmetry of the relation is grounded in the different, monadic tropes of \(a\) and \(b\) and not in some mysterious ordering fact. Hence, Hochberg's argument fails in this case. While the case just examined was rather simple, the same sort of analysis can be given in more complex cases. For example, cases such as Jill being faster than Sasha resembles John being faster than Ubu can be handled in the same manner as the simple one. Finally, mixed cases involving EN-relations and NE-relations (such as Bill was taller than Sally before Jill was taller than Wonko) can be handled by analyzing their components in the ways presented above. Thus, it is concluded that Hochberg's fourth objection fails to harm trope theory.
and is, in fact, as much a problem for universal theorist as it is for trope theories. Hence, Hochberg's argument provides no reason to reject tropes in favor of universals.

4.8 Moreland's Abstract Reference Objection

Chapter three of Moreland's book * Universals, Qualities, and Quality Instances: a Defense of Realism* is on the topic of what Moreland calls 'abstract reference.' In this chapter he presents an argument against the acceptance of tropes over universals. This argument can be presented as follows. Take statements such as "red is a color" and "red resembles orange more than it resembles blue." It would seem that these statements make reference to universals and attempts to "translate" them into statements about tropes may well strike one as being some how ad hoc or "jury-rigged" statements.

Fortunately, this argument is easily met. One option available to the trope theorist is to accept quantifiers that range over tropes rather than universals. For example, the statement "red resembles orange more than it resembles blue" can be analyzed by the trope theorist as "Each red trope resembles each orange trope more than it resembles each blue trope." That ordinary language admits of a deeper analysis should come as no surprise, especially in light of such work as Russell's account of definite descriptions. So, there seems to be no reason to accept universals over tropes simply because ordinary language appears to commit its user to the existence of universals.

A second reply, and the favored one, is to accept that statements like "red resembles orange more than it resembles blue" are statements about resemblance classes of tropes. As was noted above in Hochberg's third objection against trope theory, a resemblance class of tropes is the functional equivalent of a universal. As such, if the universals

---


221 If the fact that these examples involve color, which may not be actual properties, the argument can be reformulated using examples like "cooling causes contraction" or "objects with greater density have greater mass."

222 It should be noted that it is unclear exactly what metaphysical commitments underly ordinary language and using the way ordinary users employ a language to support a metaphysical position provides, at best, very weak support for that position.
theorist can give an adequate account of the type of statements in question (and Moreland argues that he can), then so can the trope theorist. For example, take the statement "red resembles orange more than it resemble blue." The trope theorist's analysis of this statement would be as follows: "the class of red tropes resembles the class of orange tropes more than it resembles the class of blue tropes." It will be remembered that while the class nominalist and the resemblance nominalist's analysis of such statements were inadequate, the trope theorists analysis of such statements are adequate\textsuperscript{223}. In a sense, Moreland is trying to run Jackson's objection\textsuperscript{224} against the trope theorists and, as has been shown, the Jacksonian objection has no effect on trope theory. This reply can also be used in various objections that are similar to Moreland's but are put forth in terms of artificial languages, such as the various predicate logics. However, there is no problem for the trope theorist who wishes to use predicate logic. While the universal theorist can take various predicates to refer to his universals, the trope theorist can simply take such predicates to refer to resemblance classes of tropes. For example, take the statement (x)(Fx) in which it is assumed that the predicate 'F' refers to a property (in the metaphysical sense). The universal theorist can take 'F' to refer to his universal F, but the trope theorist can take 'F' to refer to the resemblance class of F tropes. Since it has been shown that resemblance classes can perform the functions of universals (without the corresponding problems that stem from multiple location), if the universal theorist faces no difficulties from artificial languages, neither does the trope theorist. Therefore, these two language objections do not harm the theory being defended.

4.9 Uninstantiated Tropes

\textsuperscript{223}See chapter two.
\textsuperscript{224}This objection was presented in chapter two. See Frank Jackson's "Statements about Universals", \textit{Mind} 86, 1977, pp. 427-429.
In this section the issue of whether or not to accept uninstantiated tropes will be considered. While uninstantiated properties do have their uses, they should be rejected. Uninstantiated universals were argued against in chapter two and uninstantiated tropes will be argued against in this section.

While it was argued in chapter two that uninstantiated universals should not be accepted, it was also noted that uninstantiated universals do philosophic work that counts in favor of their acceptance. Uninstantiated tropes would be able to do similar philosophic work and this capacity of uninstantiated tropes serves to motivate their acceptance. The discussion of uninstantiated tropes will consist primarily of considering and then undercutting the motivations for accepting them.

As Armstrong notes it has been argued that uninstantiated properties can serve as perfect, objective standards for such purposes as doing geometry and making moral judgments. While the claim that there is a need for objective standards can be questioned, it will be assumed, for the sake of the argument, that there is such a need. Hence, the point of contention is whether or not uninstantiated universals are needed to provide such standards. Armstrong suggests that such standards can be had by extrapolating the perfect standard from the properties of ordinary things. If Armstrong is right, then there is no need to postulate the existence of uninstantiated properties to serve as objective standards. This is because if there is no need for a metaphysical grounding for such perfect standards, then there is no need for uninstantiated properties to serve as such standards. However, even if there is a need for metaphysically grounded objective

---

225 An uninstantiated trope would be a trope that existed in a Platonic Heaven and was not part of any substance. Such tropes would presumably be outside of all the dimensions (such as space-time). On a view that involved uninstantiated tropes, tropes would "go" to the realm of uninstantiated tropes when they ceased to occupy the various dimensions and they would "come" from this realm whenever whatever mechanism that "brings" tropes into the various dimension came into play.


227 This is being assumed because if there were no need for objective standards, then there would be no need of uninstantiated universals to serve as objective standards.

standards, perfect, instantiated properties would serve quite well as such standards. Hence, even if there is a need for metaphysically grounded objective standards, it does not follow that there is a need to accept uninstantiated properties to serve as such standards. Therefore, the need for objective standards does not serve to motivate the acceptance of uninstantiated tropes.

A second reason to accept uninstantiated properties is that they can be used to provide an account of change which does not involve the destruction and creation of properties. Instead of claiming that tropes can perish and be created, it can be claimed that tropes go from being instantiated to being uninstantiated or the reverse. Accepting that tropes can be created and destroyed runs contrary to the view, held by certain philosophers, that properties are not subject to creation or destruction. Armstrong, for example, asserts that "properties are not the sort of thing which can be destroyed (or created)." If this is the case, then uninstantiated tropes would have to be accepted. After all, it is easy to imagine that, for whatever reason, all F objects ceased to be F. In such a case F (or rather all the F tropes) is no longer instantiated. But, if properties cannot be destroyed, then F (or rather all the F tropes) must continue to exist uninstantiated. It is also easy to imagine that up until 1993 there were no F things and then on January 1, 1993, an F thing came about. Hence, it would seem to be the case that uninstantiated tropes would have to be accepted if properties cannot be created or destroyed. However, in light of the serious difficulties that uninstantiated properties face, it would be desirable to find a principled way to avoid taking this option.

One plausible way to account for such changes without accepting uninstantiated tropes is to account for the emergence of new "properties" in terms of such "properties" being emergent qualities or features that arise when various tropes combine together to

---

230 See chapter two.
form complex entities. The old "properties" that vanish would be accounted for in terms of such "properties" vanishing because the combinations and orderings of tropes that form them change or cease to hold. For example, consider the following situation. At one time there were no computers and then the first one was built. This could be accounted for in terms of the property being a computer becoming instantiated. If this is the case, than humanity's invention of the computer brought about a fundamental metaphysical change in the universe. While the invention of the computer was revolutionary, it does not seem that it resulted in any profound, metaphysical change in the universe. A much more plausible account of the situation is that the invention of the computer involved the arranging of components that had been part of the universe all along and that being a computer is a rather complex mater, but one that is still accounted for in terms of the various components and relations among them. Hence, there is no need to accept uninstantiated universals to account for the emergence of such "new properties." In the case of "properties" ceasing to be instantiated, it seems reasonable to accept that these "properties" were not tropes at all. They were qualities or features that emerged from combinations and orderings of tropes and when these combinations and ordering no longer held the corresponding features and qualities would also cease to be. For example, when the last Triceratops died it was not the case that the property of being a Triceratops became uninstantiated. Rather the complex orderings of tropes that served to compose the various Triceratops no longer held. Thus, there is no need to accept uninstantiated universals for such cases.

The question remains as to whether or not there are cases which can not be handled in the manner just described. If there are properties that cannot be accounted for in terms of orderings of tropes which seem to emerge and vanish, then a different account will be required. An example of such a case might be the emergence of a new basic force, along the lines of the basic forces already present (like gravitation). In such a case, in would be
reasonable to accept that new tropes had appeared in the universe. In such a case, an account of their appearance would be required. Now, if that same force were to vanish a few days later, it would seem reasonable to accept that those tropes had vanished. If it is assumed, for the sake of argument, that new force tropes appeared and then vanished, then there are two ways to account for this situation. One way to do this is to accept uninstantiated tropes. On this view, the tropes in question went from being uninstantiated to being instantiated and then back again. While this view avoids properties that can be created and destroyed, it does suffer from all the difficulties uninstantiated properties face. The second way to account for the situation is to accept that tropes can be created and destroyed. On this view, the tropes were created and then ceased to be. Since there is no reason why tropes need to be timeless, unchanging, eternal, and indestructible, it does not seem to be problematic to accept that they can be created and destroyed, should the need arise to make such a claim in specific cases.

Because the motivations for accepting uninstantiated tropes has been undercut (primarily due to the fact that the work they are postulated to do can be done without them) and because of the severe problems they suffer from (as presented in chapter two), it is reasonable to reject uninstantiated tropes. Hence, they will not be endorsed.

4.10 Disjunctive, Conjunctive, and Negative Tropes

A disjunctive property is a property such as being a raven or a writing desk. It can be claimed that disjunctive properties are properties in the metaphysical sense and that a raven and a writing desk resemble each other in that they are both ravens or writing desks. However, it will be argued that there are no disjunctive tropes. Suppose that particular masses and colors are tropes. In such a case a disjunctive trope would be, for example, having a mass of M or having a color C. Now, consider two objects. Object A has trope M and object B has trope C. If there are disjunctive tropes of the sort just discussed, then A and B would have exactly resembling tropes, namely the trope C or M.
But does this, in any way, show that A and B exactly resemble one another in any metaphysical sense? It does not seem so.

Tropes are simple entities in that they do not have any components. A disjunctive trope would have to be a complex entity, since it would consist of two distinct tropes and whatever it was that served to disjoin them. Hence, a disjunctive trope would not be a trope at all, but would be two (or more) tropes connected by something that served to disjoin them. It may be replied that a disjunctive trope is actually a single trope with two (or more) distinct powers, but that not all these powers need be active. So, for example, when A has a C or M trope, A has a color C and while B has a C or M trope, B has mass M. They both have the same type of disjunctive trope, but the tropes have a different active power in each case. Further, it seems difficult to accept that such a disjunctive trope would really be simple. Given the fact that it would have two (or more) distinct powers and a special disjunctive connection between them, it would certainly seem to be a complex entity. Until some clear account of such entities can be provided, it does not seem reasonable to accept these mysterious simple, yet multi-powered disjunctive tropes.

Finally, it is not clear exactly what the status of the disjunction connection between the disjunct trope or powers would be. If it is an entity in its own right, then accepting it would result in a corresponding increase in the price tag of the theory. Since there do not appear to be any particularly good reasons to accept this additional entity, it should not be accepted. If this connection is something else, then exactly what it is would have to be specified. It is simply not clear that there is anything in the world (except for electronic circuits and various other devices) that would correspond with the logical disjunctive connective.

It may be replied that, despite these problems, there is a need to accept disjunctive tropes. For example, consider the following case. Imagine a chemical, Z, that will react to the presence of tropes of type A or type B by exploding. It would be correct to say that
the presence of a type A trope or type B trope will cause Z to explode. Those who favor disjunctive tropes would take this as a reason to accept disjunctive tropes, since it can be claimed that Z is reacting to a disjunctive trope of type A or B being present and A or B can be taken as being a type of trope. However, I believe a better explanation is that Z will react to A by exploding and that Z will react to B by exploding and that there is no need to postulate a complex entity (the disjunctive trope) to account for this. That this is the case can be made clearer in the following example. Imagine a device that detects mass or color, such that it beeps when a mass or color is brought within its scanning range. One explanation for this device is that it detects one type of trope, the mass or color trope. Another explanation is that the device simply detects mass tropes and also detects color tropes. Both explanations, namely that the device detects two distinct types of tropes and the alternative that the device detects one type of disjunctive trope, work equally well in the device and the chemical Z examples. Hence, whether to accept disjunctive tropes or reject them comes down to the cost of accepting them. Accepting disjunctive tropes would involve facing the problems presented above, which makes accepting disjunctive tropes more problematic and costly than accepting standard tropes alone. Therefore rejecting disjunctive tropes would be the most reasonable course of action.

A conjunctive property may be construed in one of two ways. One way is to take a conjunctive property to be a conjunction of two or more distinct tropes to form a conjunctive property. These sort of conjunctive properties will be considered later in this section. A second way is to take a conjunctive property to be a single trope with two or more distinct powers.

If a conjunctive property is taken to be a single trope with two or more distinct powers, the following problems arise. First, these conjunctive tropes would be metaphysically complex since they, by hypothesis, have two or more distinct powers and perhaps something that conjoins these powers into one entity. Being complex entities
they would be more costly than the simple tropes of the view being defended. Second, there is the suspicion that such tropes are not, in fact, single entities. Since these tropes will, by hypothesis, have two or more distinct powers, it would seem reasonable, given that tropes are simple, to accept that conjunctive tropes are actually two or more conjoined tropes.

Despite the implausibility of multi-powered conjunctive tropes there are good reasons to accept conjunctive tropes of some kind. One reason to accept conjunctive properties is a linguistic one. Take an object that has tropes of type A, B, and C. It makes perfectly good sense to say that the object is A and B and C. As such, there seems to be linguistic support for conjunctive properties (in this case the property would be \(A \text{ and } B \text{ and } C\)). However, take the following case. Suppose that Bill, Tom and Jill are in a car. It makes sense to say that Bill and Tom and Jill are in the car. However, this would not provide any reason to accept that there is an actual metaphysical Bill and Tom and Jill entity. The same holds in the case of tropes. There doesn't seem to be any need to accept conjunctive entities to account for linguistic usage since people can use conjunctions without the conjuncts being metaphysically connected. Of course, one could simply accept that to each conjunction there would correspond a metaphysical entity. This would be rather odd and uneconomical, however. Hence, the linguistic motivation is not particularly powerful.

A second, more powerful, motivation for accepting conjunctive tropes is the need to account for what can be called "modifier" properties. Modifier properties are properties like light, bright, shiny, and so forth. Consider, for example, a bright yellow flower. If it is assumed (probably incorrectly) that there are yellow-ness tropes, then the bright yellow color of the flower can be accounted for in terms of there being yellow tropes that are modified by brightness tropes. There would clearly be a need for there to be a special connection that held between the brightness tropes and the yellow tropes. After all, the brightness tropes modify the yellow tropes alone and not the other tropes of the flower.
One way to account for this is to claim that the color bright yellow is a conjunctive property composed of two types of tropes. Accepting such modifier tropes means that fewer types of tropes could be accepted. For example, a trope theorist who accepts such modifier tropes would only need to postulate certain basic color tropes and modifiers for them. A trope theorist who rejected such modifier tropes would have to postulate more types of tropes. For example, the trope theorist who rejected modifier tropes would have to accept, for example, light yellow tropes, bright yellow tropes, bright blue tropes (again, assuming that there are color tropes for the sake of the argument). Modifier tropes of this sort are appealing since they enable an account to be given of what appear to be complex properties in terms of their being composed of metaphysically simple constituents. As such, accepting modifier tropes enables a trope theorist to accept complex "properties" without accepting complex tropes and the problems that accompany them. Of course, the questions remains about what exactly serves to tie these modifying and modified tropes together.

While an additional entity could be postulated, a conjoining entity, that links modifier and modified tropes together, such a postulation would increase the cost of the theory. Therefore, it would be more economical to account for modifier properties without having to make use of any entities over and above the modifier and modified tropes themselves. However, this account will not work. Consider the flower example. A flower would have numerous tropes and, as was noted earlier, an explanation is required to account for the fact that the bright tropes would modify the yellow tropes and not, for example, the mass tropes. The mere existence of the brightness and yellow tropes is simply not enough to account for the fact that the bright tropes only modify the yellow tropes. It can be argued that modifier tropes, because of their special natures, will seek out and conjoin with only the proper tropes. The problem with this is that such tropes would be complex since they would have a power aspect, a seeking mechanism, and a
conjoining mechanism. Because of the arguments given for rejecting other types of complex tropes (namely disjunctive and conjunctive tropes), it would be reasonable to reject such tropes. The most plausible option, at this point, is to accept binding tropes which serves to conjoin modifier and modified tropes. Since the cojoiner is a trope, there is no addition to the ontology. Since the binder is a simple trope, there is no increase in the theory's cost due to ontological complexity.

Thus, there are some good reasons to accept certain, limited types of conjunctive tropes, namely the modifier and modified tropes. Modifier and modified tropes are not an essential part of the theory being defended and it would not be harmed if it were found that there are good reasons for rejecting modifier tropes. However, if modifier tropes need to be accepted then the theory being defended can account for them.

A negative property may be thought of as the negation of a positive property. For example, the property _having a mass_ would have as a corresponding negative property the property of _not having a mass_. There may be negative properties that do not have corresponding positive properties, but the general idea of what a negative property is supposed to be should be clear. What must be considered at this point is whether to accept negative tropes or not.

Accepting negative tropes would be accepting that the lack or absence of a trope is itself a trope. For example, _not having a mass of 55 kg_ would be a negative trope and the absent trope would be, of course, a 55 kg mass trope (assuming for the sake of argument that there are such tropes). Negative tropes do have some degree of appeal and there are reasons to accept them. There is linguistic evidence in favor of accepting such tropes. In everyday usage statements like "the car is not red", "Bill is not here", "lack of air caused them to die" are perfectly meaningful. Further, the statement about air involves the claim that, on the surface, it was the absence of air that caused the person's death. Since it has been accepted that causal activities (such as causing deaths) are brought about by tropes,
then if absences are efficacious it would seem that the mark of being principle that has been accepted would require that negative tropes be countenanced.

The first thing to be considered is whether or not the fact that talk of absences is meaningful provides good reasons to accept the existence of negative entities in general and negative tropes in particular. Consider the following statement "There are no people on Mars." If it is acceptable to move from talk of absences to their being negative entities, then it would have to be accepted that there are negative entities, namely not-people, on Mars. This is extremely odd and there do not seem to be any good reasons to say that Mars is populated by not-people. Similarly, it would be odd to claim that because there are cars that are not red that there are not-red tropes. It would seem that the move from talk to absences to the existence of negative entities is not a reasonable one to take. Hence, the linguistic argument for the existence of negative tropes has been undercut.

It can be argued that while the linguistic argument for negative tropes fails, there is still reason to accept negative tropes since absences are causally efficacious. On the level of everyday experience there are many such cases. For example, lack of certain vitamins and minerals can cause illnesses, lack of vision prevents one from seeing, and so forth. And, since it has been accepted that causal efficacy rests ultimately on tropes, if absences are causally efficacious, then there must be negative tropes. However, it will be argued that all causal activity is the result of positive tropes and that negative tropes do not need to be brought in to provide an adequate account of cases of what appear to causally efficacious absences. The claim being defended is that when something happens that appears to be the result of a negative trope acting, what is actually happening is that a process that the positive tropes would have prevented occurs or the process that the trope would bring about does not take place, because the trope is absent. If tropes of type A prevent tropes of trope B from doing X, then it is the fact that A is not present that would account for X occurring when the B tropes are present. If tropes of type A bring about
effect E, then if type A tropes are not present, E will not be the case. On the level of ordinary experience, the following two examples should make it clear what is meant. First, consider the case of a vitamin deficiency disease. When a person has the vitamins she needs, certain processes occur and others do not occur. When the vitamins are not available, the processes that require it cease to operate and the processes it prevents will take place. It would be odd to claim that when the body lacks vitamins, some new entity appears on the scene, the not-vitamin. Medical experts certainly don't make use of such entities in their explanations of illnesses, so there doesn't seem to be a good reason to accept such negative entities as having explanatory value (at least in this case, which can be easily generalized). Second, consider the case of a stopper holding water in the sink. It is the presence of the stopper that keeps the water from running out. When the stopper is removed, the water will run out (assuming there is gravity.) and there does not seem to be any need to postulate another entity, a not-stopper, that causes the water to run out. The same should be true on the trope level. As such, if the explanatory work can be done just as well without negative tropes, then they should not be accepted.

Thus, negative and disjunctive tropes have been rejected and a limited endorsement has been given to certain conjunctive tropes, namely the modifier and modified tropes.

4.11 Determinables

A determinable property is a property which serves to group other properties into types. Determinable properties are best understood by contrasting them with determinate properties. Whereas determinate properties are specific in character, determinable properties are general in character. For example, a determinate property is a property such as having a mass of 22 kg while a determinable property is a property such as having a mass. It is clear that ordinary discourse involves talk of determinables. For example, it makes perfect sense to say that red is a color. In this case, the determinate is red and the
determinable is color. While it is clear that determinables have an important role in language, the main concern in this section is whether to accept determinable tropes or not.

In *Universals and Scientific Realism*, David Armstrong presents strong arguments against accepting determinable universals. His arguments will be pressed into service and used to argue against accepting determinable tropes. Armstrong's first argument, modified to apply to the theory being defended, is as follows: Suppose that redness is a property which all red objects, whatever their specific shade of red, have in common. Since properties are tropes this entails that the objects exactly resemble one another in a certain respect: namely in respect of their redness. Now, consider objects of different shades of red. It is in this very respect of redness that they differ. However, it is impossible for anything to be exactly resembling and different in the very same respect. If shades of red are properties, then different shades of red are different properties. It follows that redness is not a type of trope common to all red things. This argument has a certain plausibility. However, if one is willing to take a determinable to be something over and above the determinable properties of an object, the argument needs to be reconsidered. Imagine that every red object, in addition to its own particular shade, also has the property of redness (a redness type trope). If this were the case, then each of the red objects would all be different from one another (in terms of their specific shades of red), yet they would still have a common property linking them all together. In this case, the objects would have redness tropes in addition to their determinate tropes. The problem presented in the argument just given would thereby be avoided. However, Armstrong provides a second argument which I can modify to use against this reply.

---

231 It seems likely that red is also a determinable, since there are various types of reds (bright reds, crimsons, and so forth). This indicates that there probably are many levels of determinables such that a determinable may serve to group properties which in turn serve as determinables to other sets of properties.


Suppose that it is accepted that all red objects are exactly resembling in their redness, but that their difference in shade is not a difference in redness. This would involve accepting the position described above, namely that there are determinable tropes distinct from determinate tropes. Now consider crimson objects. These objects will have exactly resembling tropes. However, if a thing is crimson, it is "entailed" that it is red, since crimson is a type of red. What is particular to crimson objects must be something less than crimsonness; it might be, as Armstrong suggests, "crimsonness-minus-redness", which can be abbreviated as "C." Now, it is true that crimson is a shade of red. By Armstrong's analysis this would translate as "Redness and C-ness is a shade of red." Armstrong argues that this statement fails to capture the "special relation" that needs to hold between redness and C-ness. "To see this, consider that there might be a visually observed property D, co-extensive with C, and yet redness and D-ness would not constitute a shade of redness." In trope terms, the argument would be that there might be D tropes that are coextensive with C-tropes, yet red tropes and D-tropes together would not constitute a shade of redness.

What Armstrong has done is pose a dilemma for those who would posit determinables. If the determinable properties are linked to the determinate properties in a certain way, then the first problem is faced. For example, if redness is relevant to the specific red color of an object, then objects will differ in exactly the respect that they are supposed to resemble exactly, in this case redness. Thus, taking this avenue would lead to a contradiction: Redness tropes are exactly resembling and they are not exactly resembling. Since this position leads to a contradiction, it would be most reasonable to reject this option.


The second horn of the dilemma does not end in a contradiction, but it does lead to a serious difficulty. If there is not a "special relationship" between determinable tropes and their determinates, then situations such as the one Armstrong describes involving the D property being coextensive with the C-property can occur. Suppose that D is having a certain shape. It is clear that redness and having a shape do not constitute a shade of red. But, without a "special connection" C and D (being co-extensive) cannot be separated by the analysis. In short, without a "special relation" determinable and determinates need not be grouped properly, which is a problem.

Another, perhaps more telling, argument against determinables is based upon the mark of being principle. As was noted argued in chapter three, "where a theoretical item has no distinctive effects, it should not be accorded ontic status."\textsuperscript{236} If determinable tropes have the capacity to effect anything or be effected by anything, then they should be accepted. If not, then they should not be accepted. Suppose, for example, there is an object which has the determinate property of having a mass of two kilograms. Because of this property the object has the capacity to act and be acted upon (it can tip scales, resist being moved, hold down papers, and so forth). The addition of the determinable property of having a mass would not, it would seem, add any additional capacities to the object. Hence, there would no be a good reason to accept such a property. Since this case can be generalized to cover other properties, it would seem that determinable properties are, in general, causally inert. Hence, it would be reasonable to reject them, provided that there are no other reasons to accept them.

It can be argued that while determinables are causally inert, they still have a role to play that would justify their acceptance. Intuitively, it seems that properties can be grouped into types. For example, red, blue, and purple are all colors. If determinables are needed to account for such groupings of determinate properties, then their acceptance

could be justified. However, if a more economical alternative can be found, then it should be taken (in accord with Occam’s Razor). Indeed, such an alternative exists. The resemblances that hold between tropes and the resemblance classes that are formed on the basis of these resemblances, which have already been argued for, provide the theory being defended with sufficient resources to account for the grouping of tropes into types.

4.12 Tropes and Predicates

The issue of the relation between tropes and predicates is an extremely complex one and an adequate treatment of the topic would involve an extensive foray into the realm of philosophy of language. Instead of that, the goal to be reached is the establishment of the claim that there is not a one to one correspondence between predicates and tropes. This position has already been established to a certain degree for it has been argued that there are no tropes that correspond to some predicates such as ‘mass’ (determinables), ‘mass or color’ (disjunctive), and ‘not red’ (negative). What will now be considered is a general argument against there being an automatic passage from predicates (linguistic entities) to tropes.

The most concise attack on the claim that an automatic passage can be made from predicates to a corresponding metaphysical entity (in this case tropes) is presented by Wittgenstein in his philosophical investigations. In his well known discussion of family resemblance, Wittgenstein argues that predicates which apply to diverse and complex entities (such as games or people) do not apply to these entities on the basis of a single feature that is common to them all. On the view being defended in this work it should not be expected, for example, that there are game tropes that are possessed by all games. Rather, the various games are grouped into the resemblance class of games by the various resemblances that hold between them. There will be no single type of trope that

---


238 See chapter one for a brief consideration of family resemblance.
every game has that all non-games lack. Rather there will be various complicated
networks of similarities and resemblances that Wittgenstein writes of. Thus,
Wittgenstein's remarks are very congenial to the trope theory being defended.

These results can be modified a bit and applied to complex entities. In the case of
complex entities it should not be suspected that there is a single trope corresponding to
what they are. For example, take being a man. Being a man is not likely to be a single
trope. Rather 'being a man' is a loose and popular term for the actual underlying (and
extremely complex) reality. Since the physical complexity of being a man is staggering,
one would suspect a corresponding metaphysical complexity. Hence, one would expect
that there is no being a man type of trope. In the light of Wittgenstein's remarks and the
arguments presented in previous sections, it would be reasonable to reject the automatic
move from predicates to tropes. Of course, the question remains as to how it is that one
decides whether there is a genuine trope present or not. It is to this issue that the
discussion now turns.

Wittgenstein asserts, at least in the case of game, to "don't think, but look" in order
to determine whether a genuine property is present or not. Unfortunately, this seems a bit
too simple (unless it is accepted that humans have reliable visual access to the
metaphysical structure of reality-which does not seem likely). Armstrong makes the
eminently reasonable claim that there is no infallible way of deciding what are the true
properties (on the view being defended tropes and on Armstrong's view universals) and it
certainly seems that semantic methods will not have a privileged role in the endeavor of
determining what the real properties are. What then, is to have a privileged role?

240 After all, the "rough and ready" character of natural language should indicate that it does not actually
"cut the beast of reality at the joints." Also, in the case of the various sciences one would not expect to
determine the nature and number of the various subatomic particles through semantics and careful attention
to language. Why then would one suspect that semantics would be able to play such a special role in
metaphysics. This is not to say that semantics and language do not have roles to play in the endeavor.
Language is, in a sense, where the problem of universals begins. But, except for the predicate nominalist, it
is not where it ends.
Armstrong claims that total science, and in particular physics, is the best guide to what properties there are. This position is reasonable since many of the scientific disciplines are aimed at determining the true nature of the world and it is reasonable that the information they acquire will be of use in determining what the actual properties are. Of course, it is also wise to retain a degree of healthy skepticism and suspect that not even total science will provide all the answers. There may well be things that humans will (or perhaps can) never know. Further, if there are entities outside the realm of total human science, then other guides to reality would be needed. Given the difficulties of producing a method to determine what the real properties are (let alone determining what they actually are), it is fortunate that there is no obligation to determine what the actual tropes are or what methodology may be used to determine what they are on the part of the trope theorist. The position being defended is that there are tropes, not that, for example, there are color tropes or mass tropes. The theory being defended is analogous to a theory in physics which is aimed at arguing for the existence of sub-atomic particles, but is not committed to exactly what sub-atomic particles there are or what laboratory methods and equipment would be used to study them.

4.13 Conclusion

In this chapter the claims that there are properties (in the metaphysical sense) and that these properties are particulars were presented and defended. In the course of the defense, a wide variety of objections against trope theory were replied to and trope theory was defended from these attacks. It was also argued that certain types of tropes should be excluded from the theory (namely determinable, disjunctive, and negative tropes) and it was argued that there is no automatic move from language to metaphysical entities in the case of predicates and tropes. The discussion now turns to an extended consideration of resemblance.

CHAPTER V
RESEMBLANCE AND THE PROBLEM OF UNIVERSALS

5.1 Introduction
To this point it has been argued that plausible metaphysical solutions to the problem of universals need to involve properties and that it is most reasonable to accept that properties are particulars (tropes). It has also been argued that tropes are compressed together to form substances by a relation of compresence and that these entities (tropes and substances) exist within a real space-time.

In this chapter the focus is on resemblance. It is contended that resemblance serves to group tropes, as well as other entities, into resemblance classes. It is this function of resemblance that is key to the solution to the problem of universals proposed in this work. The discussion begins with a brief examination of resemblance, followed by consideration of a variety of attacks against resemblance, and the work will conclude with a discussion of the role of resemblance in the solution to the problem of universal put forth in this work.

In chapter two of this work the method adopted was as follows: It was argued that there is an exhaustive competition class consisting of the most plausible proposals to solve the problem of universals. Of these proposals, trope theory was found to be the most plausible and hence is was accepted. In this chapter the method employed will be of the sort used by David Lewis in his work *The Plurality of Worlds.*

philosophers should accept possible worlds realism because the hypothesis is serviceable and fruitful. In short, accepting possible worlds (taken as metaphysical entities) yields numerous theoretical benefits and hence they are worth the ontological price. The general principle in operation is that it is reasonable to accept a theoretical postulate as real if doing so does useful and important philosophic work. Modified a bit, this argument can be presented to apply to the situation at hand. In order for it to be reasonable to accept the trope-semblance view being put forth it has to be the case that: 1) accepting the trope-semblance view avoids various problems that plague other proposed solutions to the problem of universals and 2) accepting the trope-semblance view is fruitful in terms of the important philosophic work it does (in terms of the philosophic problems it solves). Since it has been argued, in chapter one, that the problem of universals is important, if it can be shown that a trope-semblance theory does provide an effective solution to the problem of universals, then it would be reasonable to accept this view.

5.2 Resemblance

Resemblance, as was noted in chapter two, has a number of features. Resemblance is objective. If a resembles b to degree D, then this resemblance is not just a matter of opinion and is not exhausted by the attribution of resemblance on the part of humans or other beings. Resemblance also admits of degrees. Sometimes the resemblance between entities is very minimal. For example, a pair of running shoes and a neutron star do not resemble each other in many respects. Sometimes the resemblance between entities is very great. For example, two electrons resemble each other greatly (perhaps exactly). The spectrum of resemblance ranges from complete non-resemblance to exact resemblance.

In chapter two three categories of resemblance were discussed: N-resemblance\textsuperscript{243}, E-resemblance\textsuperscript{244}, and D-resemblance.\textsuperscript{245} N-resemblance, E-resemblance, and D-

\textsuperscript{243}Complete non-resemblance.
\textsuperscript{244}Exact resemblance.
\textsuperscript{245}Some degree of resemblance greater than complete non-resemblance, but less than exact resemblance.
resemblance are symmetrical relations, while only E-resemblances are transitive and reflexive. As noted in chapter two, since E-resemblance is symmetrical, transitive, and reflexive relation, entities which E-resemble one another form mutually exclusive equivalence classes. Entities which D-resemble one another also form resemblance classes, but these classes have less internal homogeneity than the classes of E-resembling entities. These classes play an important role in the theory being presented and they are discussed, in detail, below. There can also be N-resemblance classes which have as members entities which fail to resemble one another in any respect. While there may be such classes, they serve no particular role in the theory being presented and will not be discussed further.

Resemblance and the Problem of Sameness

The sub-problem of the problem of sameness that is of primary concern is the problem of what it is for two tokens to be of the same type. The discussion of this problem begins with a consideration of complex tokens (substances and objects) which have properties. The problem of sameness, in the context of complex tokens, is the problem of what it is for complex tokens to be of the same type. The corresponding question is: in virtue of what are all F objects F? For example, in virtue of what are all red objects red? As noted in chapter two, there is a great intuitive appeal to accept a universal based solution to this problem. It can be argued, as universal theorists do (and as was presented in chapter two), that all F things must have something in common since they obviously share a common nature. This nature is recognized and marked by having terms that can be applied (equally and fully) in various instances, such as 'mass.' Each F object is F, so it seems reasonable to accept that F is a universal. Despite the great appeal of a universal based solution to the problem of sameness, there is a plausible alternative that does not suffer from the difficulties presented in chapter two against universal theories. This solution is, of course, a trope-resemblance theory.
The trope-resemblance solution to the sub-problem of sameness under consideration is as follows: in virtue of what are two complex F tokens\(^{246}\) F? It is in virtue of the fact that each has an F trope as a constituent. In virtue of what are the simple F tokens (the F tropes) F? It is in virtue of the fact that they resemble one another that they are simple tokens (tropes) of the same kind.\(^{247}\) In virtue of what do the tropes resemble one another? The answer to this question is that tropes resemble one another in virtue of what they are. That this is the case is supported by the fact that resemblance is a NE-relation which depends entirely on, and is reducible to, the participants in the relation. Hence, there is nothing over and above the tropes which resemble one another which accounts for their resemblance. The points just presented are controversial and are subject to dispute. Thus, these claims need to be argued for and arguments are presented below. There are also a variety of objections against making use of resemblance as part of a proposed solution to the problem of universals and they will be addressed below. Further, more needs to be said about the role resemblance plays in the theory in terms of what sort of work it does. These issues will also be addressed below.

Resemblance itself is taken to be a primitive notion in the theory being defended. Because of this, resemblance will not be analyzed. However, the acceptance of a primitive motivation needs to be motivated and argued for. The motivation to accept a primitive notion of resemblance is that doing so provides the basis for an effective solution to problem of sameness. The price of the solution being proposed is the primitiveness of resemblance. The pay off is a solution to the problem of sameness. What must be argued, and what will be argued for below, is that the pay off is worth the price.

\(^{246}\)These complex tokens are, on the view being presented, either substances or (complex) objects.

\(^{247}\)As to the question: in virtue of what ais an F trope F, the answer must be that the trope simply is what it is and no further explanation can be offered. The position accepted here is that identity is an unanalyzable primitive.
5.3 Problems With Resemblance

One part of the price of accepting a resemblance solution to the problem of universals is the various problems that such an account might suffer from. In order to reduce the cost of accepting a resemblance based account various problems and objections that resemblance faces will be replied to. Once these problems and objections are addressed, it will be possible to go on to discuss, in greater detail, positive reasons to accept such an account and the role it plays in the solution to the problem of universals being proposed.

Problems from Chapter Two

In chapter two three sorting problems and Russell's argument were presented as attacks against resemblance nominalism. It was determined that the three sorting problems were telling against resemblance nominalism. It was also determined that Russell's argument was not particularly problematic for resemblance based theories for two reasons. First, resemblance was shown to be an NE-relation (and Russell's argument requires resemblance to be an EN-relation in order to succeed) and second, it was argued that Russell's argument applied to the universal theorist's view as well (and hence cannot motivate the acceptance of universals over tropes). Thus, only the three sorting problems will be considered in this section.

The first sorting problem is the problem of determinables. This problem is as follows: Take the proposition that red is a color. The resemblance nominalist would analyze this proposition in terms of the resemblance that holds between red objects and a paradigm colored object. For example, what it is for red to be a color is for all red objects to resemble the paradigm color object C to the required degree D. The defect of this analysis is made clear in the following discussion. Red objects are also extended, so they also resemble the paradigm extended object. By parity of reasoning, it follows that the determinate property red would be a token of the determinable property extension type.

\textsuperscript{248} Such as "standard" resemblance nominalism as well as trope-resemblance theories.
Since this is clearly not the case, it would seem that there is something wrong with resemblance nominalism. Trope theory, as argued in chapter four, has the resources to solve the problem of determinables without accepting determinable tropes. For example, for a red trope to be a color trope is for the red trope to be a member of the class of colored tropes. The red trope is a member of this class in virtue of its resemblance to the other members of the class. The class itself consists entirely of determinate tropes and the "determinability" of the class arises from the fact that it is a D-resemblance class. Thus, a trope resemblance account shares the advantage of not having to postulate determinable properties (as metaphysical entities) with class nominalism, but does not share resemblance nominalism's inability to adequately analyze what it is for a determinate token to be of a determinable type. Thus, the problem of determinables is solved by a trope-resemblance account in an ontologically economical manner, which is a point in its favor.

The second problem is the problem of resemblance. The problem is to account for the fact that objects do not just resemble one another in varying degrees, but also do so in certain respects. For example, consider a baseball, an orange, and a piece of white paper. The baseball resembles the orange more than the piece of white paper in terms of shape and resembles the piece of white paper more than the orange in terms of color. While the resemblance nominalist (who rejects properties) is unable to provide an adequate analysis of this situation and others like it\textsuperscript{249}, trope-resemblance theory has no problem here. If there are color and shape tropes, then the analysis can be presented in a straightforward manner: For the ball to resemble the orange more than the paper in terms of shape is for the shape trope of the ball to resemble the shape trope of the orange more than the shape trope of the paper. For the ball to resemble the paper more than the orange in terms of color is for the color trope of the ball to resemble the color trope of the paper more than it

\textsuperscript{249} As I argue in chapter two.
resembles the color trope of the orange. The key to solving the problem of resemblance is to accept that there are metaphysically complex objects which have tropes as constituents. These tropes resemble one another in various degrees. Hence, a case in which two objects resemble each other in a certain respect is a case in which they each have resembling tropes as constituents. Hence, for two or more objects to resemble each other in respect F is for those objects to have F tropes as constituents. Thus, it may be safely concluded that trope-resemblance theory is able to solve the problem of resemblance between complex entities. Hence, one motivation to accept a trope-resemblance theory is that accepting this provides a solution to the problem of resemblance between complex objects. In this case the price is accepting tropes and resemblance and the pay off is a solution to the problem under consideration.

At this point it should be noted that there is no corresponding problem for tropes. Tropes are, unlike objects, simple entities. They are simple in two respects: first, a trope does not have entities that are more basic as parts or constituents and second, a trope is a single property instance and hence tropes are not multiple properties. Because of this, tropes do not resemble one another in terms of different properties they possess. Hence there is no need to make the sort of distinctions required in cases involving complex objects.

The third sorting problem is the problem of paradigms. Briefly, the problem is as follows. Suppose that R and C are two distinct properties, such as being red and being cubical. It is possible that the paradigm R object is also the paradigm C object and that R and C objects all resemble this paradigm, P, to degree D. In such a case there will be one resemblance class of objects resembling the paradigm to degree D and this class will be composed of the R and C objects. Unfortunately, on the resemblance nominalist's

---

250This is, of course, a very loose example. An actual analysis of color and shape in this situation would be far more complex. However, the general idea remains the same since even in the very complex analysis that would be required it would still come down to resemblances between tropes.
analysis it would follow that R and C are the same property, such that R = C. For example, being red would be the same property as being cubical such that being red = being cubical. Accepting a trope-resemblance view enables this problem to be avoided. On the view being defended, objects are complex and tropes are simple. Hence, the "paradigm" F entity will be an F trope (and any F trope would do). Unlike the resemblance nominalists paradigm F object, the F trope is simple and has no other properties and this enables trope theory to avoid the problem. Suppose that R and C are two distinct, determinate properties. It can not be the case that the paradigm R trope (or any R tropes) is also the paradigm C trope (or any C tropes). This is because tropes, being simple, do not have multiple natures. Hence a C trope will be C and C alone and hence will not be R and a R trope will be R and not C.

The ability of a trope-resemblance to solve this problem is a point in its favor and provides a reason to accept such a theory. It is also a pay off that helps to offset the costs of accepting tropes and resemblance.

Finally, trope-resemblance theory successfully avoids the objections which were raised against class nominalism in chapter two. The contingent being problem and temporal problems that class nominalism suffered from are avoided in the following manner: for a single object to be F is for that object to have an F trope as a constituent and not for that object to be a member of the class of F things. Hence, what happens to the other F things is irrelevant to the F-ness of an F object. Also, on trope-resemblance theory the fact that is possible for there to have been more or fewer F objects (in the case of contingent objects) has no bearing on what it is to be F. This is because for an F object to be F is for that object to have an F trope and not for that object to be a member of the class of Fs. Hence, trope-resemblance theory avoids both the contingent being problem and temporal problems that class nominalism faces. Finally, as was argued above, trope-
resemblance theory easily handles the determinables and resemblance problems that
generate so much difficulty for the class nominalist.

Because of these results, it is reasonable to accept a trope-resemblance account over
both class nominalism and resemblance nominalism. The ability of trope-resemblance
theory to solve the various problems presented above also serves to motivates the
acceptance of trope theory and the pay off of solving these problems helps off set the cost
of accepting tropes and resemblance.

The Problem of Unique Cases

One objection that was not raised in chapter two against resemblance nominalism is
the problem of unique cases. The problem is, briefly, this: Suppose that there is a world
which has only one instance of R (redness for example). In this world R is one of a kind
and does not resemble a paradigm R, primarily because there is none in that world. So, by
the analysis offered by resemblance nominalism, this instance is not R. Yet, this
instance would, intuitively, still be R. Thus, resemblance nominalism does not have an
adequate account of what it is for one object to be R.

Trope theory does not suffer from this problem. None of the other F tropes enter in to
a particular F trope being F, hence the presence or absence of other F tropes has no
bearing on an F trope being F. It may be asked, in virtue of what is an F trope F? On the
view being defended, for a trope to be F is simply for that trope to be what it is, namely
an F trope. This is simply a primitive fact about tropes and was discussed and argued for
in chapter three in the context of individuation. Taking the individuation of tropes to be
primitive adds to the cost of the theory, but this cost is reduced in the following two
ways. First, as was argued in chapter three all theories proposed to solve the problem of
universals have to accept some form of primitive individuation. Second, accepting a
primitive account of individuation enables trope theory to avoid the unique case

251 The analysis is a is F iff a suitably resembles a paradigm F object.
objection. Thus, trope theory has an advantage over resemblance nominalism which helps motivate its acceptance.

**Kung's Objection**

Guido Kung presents the following sort of objection against resemblance theories. Suppose that there are three resembling objects a, b, and c which are all red. Now, resemblance relations are properties, so if the cases of being red are all tropes, then the cases of resemblance that hold between them must also be tropes. These resemblance relations will also resemble one another and these resemblances will also be tropes. Of course, these resemblance relations will also be tropes and they too will resemble one another and so on, into infinity. This regress, it is claimed, is either vicious or at the very least uneconomical. Since this is a problem for the trope-resemblance view being defended, a reply is in order.

First, the fact that for each resemblance there will be an infinite number of resemblances is not particularly problematic. As Keith Campbell points out, "everyone who has not yet celebrated their centenary labours under an infinitude of characteristics, those being not yet 100 years old, not yet 101, not yet 102, not yet 103...We take such infinities in our stride, and the resemblance regress is no more burdensome."

Second, this sort of regress is basically the same as the one attributed to Russell in chapter two. Hence, the replies given to Russell's regress can be applied here. Since these replies have already been given, they will not be restated here. Thus, it can be concluded that trope-resemblance theory avoids Kung's objection.

**Resemblance as Partial Identity**

On the view being defended, resemblance is a derived or dependent relation. Resemblance between complex entities is analyzed in terms of resemblances between

---

253 Which I formulated as the second (regress) argument.
tropes and the resemblances between tropes are derived from or depend upon the natures of the tropes. However, resemblance is a primitive postulate of the theory being defended for it is claimed that resemblance can not be eliminated by further analysis. This assertion has not gone unchallenged.

As noted above in chapter one, Armstrong proposes a reductive analysis of resemblance in terms of partial identity. For two of his states of affairs to resemble one another is for these states of affairs to share at least one common, identical constituent. These shared, common, identical constituents are universals. Armstrong's position has an initial advantage over the view put forth by the trope theorist in terms of theoretical economy. This is because the universal theorist requires only identity, whereas the trope theorist needs to accept both identity and primitive resemblance. While Armstrong does not use this as an argument for universals over tropes, the fact that the universal theorist's position is more economical that the trope theorist's position in this respect can serve to help motivate the acceptance of universals over tropes. However, there are good reasons why this argument fails.

The first problem with this argument from theoretical economy is that the universal theorist can not complete his analysis of resemblance in terms of partial identity for there will be at least one case, namely that of universals resembling each other in respect to being universals, that can not be analyzed in terms of partial identity. That this is the case was argued for in chapter two.

Second, it should be noted that accepting that resemblance is analyzable into partial identity is tied to the fact that a universal is the same in each of its instances. While this provides the universal theorist with the opportunity to analyze resemblance in terms of partial identity, it also forces him to accept multiple location and all the associated

---

difficulties. It certainly seems that whatever advantage of theoretical economy that the universal theorist might gain from his analysis of resemblance in terms of partial identity, it would be far outweighed by the problems stemming from multiple location. While the trope theorist has to pay the price for his primitive resemblance (which, as was argued, the universal theorist will have to pay, too), he does not have to pay the cost of multiple location. Primitive resemblance seems the far better bargain.

Third, the issue of whether or not resemblance requires further analysis or whether it can be reasonably taken as primitive seems to be, as Keith Campbell claims, a matter of philosophic intuition. If it can be shown that leaving resemblance unanalyzed is intuitively acceptable, it will help mitigate the cost of taking resemblance to be a primitive. Campbell states that the claim that resemblance requires analysis is "uncompelling." While he does not argue this claim, he does go on to offer a discussion to help guide one in the formation of his philosophic intuitions about resemblance.

Campbell begins with a case involve complex entities. Imagine that there is a necklace consisting of a gold chain, with rubies every few centimeters, and a diamond as the central stone. Now, imagine a necklace of roughly the same size and lay out which has a silver chain with pearls. If the diamond were transferred from the first necklace to the second, the second necklace will clearly more closely resemble what the first necklace was originally like. This is a clear, uncontentious case of partial identity of particulars. The second necklace now is partially identical with the first necklace then and resembles the earlier state of the first necklace (when it had the diamond as a part). Hence, partial identity does yield resemblance.

---

255 See chapter two.
Now suppose that the diamond has a twin which was cut and polished so it matches the first so precisely that even the experts cannot reliably tell the two diamonds apart. Imagine that the twin diamond is attached to the necklace of silver and pearls. In this case there is no partial identity of particulars between the two necklaces. However, it certainly is reasonable to claim that they do resemble one another. If these intuitions are sound, then partial identity of ordinary (non-trope) particulars is not essential to account for the resemblances among things.

What about the cases involving single, non-complex entities like tropes? Suppose, for the sake of the argument, that the two diamonds are substances. Why should these two diamonds not resemble one another in virtue of their having resembling constituents? If, as Campbell has argued, the two necklaces can resemble one another in virtue of containing resembling, but not identical diamonds, then the two diamonds can resemble one another by containing resembling tropes. Thus, there is no need to postulate universals in order to provide an analysis of resemblance because primitive resemblance seems intuitively plausible. Thus, the price off accepting resemblance as a primitive has been reduced.

In the light of these results, there is no good reason why resemblance needs to be (or even can be) analyzed in terms of partial identity. Of course, accepting a primitive notion of resemblance is not without its price. Fortunately, this price is mitigated by the fact that the universal theorist also requires a primitive notion of resemblance; hence universal theory can claim no advantage of theoretical economy over trope theory here. The price is also mitigated by the fact that taking resemblance as a primitive seems to be an intuitively plausible move.
5.4 Goodman’s Imperfect Communities

In *The Structure of Appearance*[^258] Nelson Goodman raises the coextension problem and the problem of imperfect communities. The problem of imperfect communities is also raised in Goodman's *Problems and Projects*.[^259] While these objections were raised specifically against Carnap's proposed solution to the problem of universals in *Logische Aufbau der Welt*[^260] they constitute an attack on resemblance based attempts to solve the problem of universals in general. Hence Goodman's objections need to be addressed within the context of the theory being defended here.

A brief sketch of the 'non-paradigm resemblance nominalism' view Goodman is attacking is as follows.[^261] This form of resemblance nominalism is similar to resemblance nominalism in many respects. Specifically, it is a property denying view which proposes to solve the problem of universals by an account involving resemblance between objects. The main difference between non-paradigm resemblance nominalism and "standard" resemblance nominalism is that resemblance classes of non-paradigm resemblance nominalism are formed not on the basis of the objects resembling a paradigm object, but on the basis of their resemblance to one another. Hence, on this view a resemblance class would consist of objects which all resembled each other more than they resembled any other objects. On this view, for two objects, A and B, to be F would be for them to belong to the resemblance class of F things. A and B would belong to this class in virtue of their resemblance to one another. Thus, properties correspond to resemblance classes on the non-paradigm resemblance nominalist's view since what it is for A and B to have the property F is for them to be members of the F resemblance class. According to Goodman,

[^261]: This sketch does not purport to adequately represent Carnap's view in any way, but is merely intended to give the reader the context of the objections to be discussed.
the main claim of such a view is that "qualities can thus be identified with the most comprehensive class of particulars that are all alike." This view is very similar to the trope-resemblance view being presented in this work since for two entities, A and B to be of type F is for them to both be members of the resemblance class of Fs. A and B would belong to this class in virtue of their resemblance to one another. On this view, types are also identified with resemblance classes. The main difference (and the crucial difference) between a trope-resemblance theory and a non-paradigm resemblance theory is that while the trope theorist takes objects to have constituents of a metaphysically more basic nature, namely tropes, the non-paradigm resemblance nominalist takes his objects to be metaphysically basic. As will be shown, this difference enables trope-resemblance theory to avoid Goodman's objections.

Goodman's coextension problem is as follows: Suppose that all and only Pandas eat bamboo. If this is the case then the resemblance class of Pandas and the resemblance class of bamboo eaters will be the same classes (since they will have the same members). Given the non-paradigm resemblance nominalists analysis, it would follow that the property of being a Panda = the property of being a Bamboo eater. Since this is not reasonable to accept, the non-paradigm resemblance nominalist faces a difficulty here.

The second problem, the problem of imperfect communities, arises in the following manner. Objects can (and do) resemble each other in different respects. For example, object a resembles object b in terms of shape and object b resembles object c in terms of color, and so forth. Because of this a resemblance class could be "constructed" as follows: a red block made of wood resembles a blue sphere of wood which resembles a blue block made of metal. Each object resembles the other two and it can be supposed (for the sake of argument) that they have the same degree of resemblance where their properties match up. Hence, the wood block, the wood sphere, and the metal block form a resemblance

class. Given the non-paradigm resemblance nominalist's analysis, it follows that a single property corresponds to the resemblance class. This is problematic for it is counterintuitive to claim that there is property common to all three of these objects that serves to group them together and distinguish them. The problem is, to be specific, that the analysis offered by non-paradigm resemblance nominalism generates spurious properties and spurious properties need to be avoided by any adequate solution to the problem of universals. It could be claimed, in response, that there is a non-spurious, disjunctive property (being a red block or wood or being a blue sphere of wood or being a blue metal block) which is common to all the objects in question. However, in light of the arguments given in chapter four against accepting disjunctive properties, this option is not very desirable.

While the objections Goodman raises are very damaging to non-paradigm resemblance nominalism, they are readily avoided by accepting a trope-resemblance view. As noted, both problems arise because the non-paradigm resemblance nominalist accepts only complex objects with many different qualities into his ontology, while rejecting the existence of metaphysical properties. These objects are therefore metaphysically basic in the sense that they do not have any entities of a more basic ontological status (namely properties of some kind) as constituents.

In the case of the coextension problem, resemblance classes can, on the account offered by the non-paradigm resemblance nominalist, have only the sort of previously described complex objects as members. Because of this, the fine division among the various qualities of the objects required to avoid the problem of imperfect communities is not available to the non-paradigm resemblance theorist. In contrast, the trope theorist can avoid the problem. Suppose, as per the example, that the class of Pandas and the class of bamboo eaters have the same members. On the trope theorists account, what it is to be a

---

263Spurious properties and the reasons why they should not be accepted are discussed in chapter two in the section on class nominalism.
Panda is to have a *Panda* trope (this is assuming, for the sake of the argument but incorrectly, that *being a Panda* is a trope) and what it is to be a bamboo eater is to have a *being a bamboo eater* trope (again, assuming there are such tropes). If *being a Panda* and *being a bamboo eater* are not the same properties, then it follows that the *being a Panda* tropes and the *being a bamboo eater* tropes will not be the same tropes. Thus, the class of *being a Panda* tropes and the class of *being a bamboo eater* tropes will not have the same members and hence they will not be the same classes. The problem is avoided because tropes are simple\(^{264}\) and only have, or rather are, one property. Since the coextension problem only arises when the members of the resemblance classes are complex objects with many qualities, the problem fails to arise on the trope-resemblance view. Of course, the price paid in avoiding the problem is the acceptance of tropes, but it certainly seems worth the price.

In the case of the problem of imperfect communities, the problem arises for the non-paradigm resemblance nominalist because the members of the resemblance classes are complex objects. Once again, the non-paradigm resemblance nominalist can not make the fine grained divisions required to avoid the problem. However, accepting tropes avoids the problem. Suppose, as per the example considered above, that there are three objects under consideration: a red block of wood, a blue sphere of wood and a blue sphere of metal. Assuming that there are red tropes, blue tropes, metal tropes, and wood tropes, the problem can be avoided in the following manner. On the trope-resemblance view the red block of wood will have a red trope and a wood trope as constituents, the blue wooden sphere will have a blue trope and a wood trope as constituents, and the blue metal sphere will have a blue trope and a metal trope as constituents. Now notice that: 1) tropes are

\(^{264}\) This claim was argued for above. The argument is as follows: suppose that \(A\) is a complex trope. \(A\) must have constituents that are tropes. If these constituents are complex tropes, they must have constituents and if these constituents are complex, they must have constituents, and so on. In order to avoid an infinite regress, simple tropes need to be postulated. These tropes are the simplest properties there are and they have no more basic constituents.
simple so that they have or rather are only one property and 2) exactly resembling tropes form mutually exclusive equivalence classes (which are called 'exact resemblance classes'). Because of these two facts, an exact resemblance class, \( F \), will consist of all and only the \( F \) tropes and \( F \) will be a single type. In the example under consideration, the blue tropes will belong to one exact resemblance class which consists solely of blue tropes, the red trope will belong to another exact resemblance class which consists solely of red tropes, and similarly for the metal trope and wood tropes. All of these classes will be perfect communities. Hence, there can be no imperfect communities of exactly resembling tropes (exact-resemblance classes containing more than one type of trope) and the problem is avoided. Once again, there is a price to be paid, namely that of accepting tropes. However, as long a trope-resemblance theory can do an adequate amount of philosophic work (and that it can will be argued for below), the price will be worth paying.

5.5 Goodman's Seventh Stricture and Two Attacks on the Objectivity of Resemblance

In his Problems and Projects, Nelson Goodman presents seven strictures on similarity\(^{265}\) which are aimed at showing that resemblance is not philosophically useful. Of the seven strictures Goodman presents, only two are relevant to the issue at hand (namely the use of resemblance in a proposed solution to the problem of universals) and these are the sixth and seventh strictures. The sixth stricture is that "Similarity between particulars does not suffice to define qualities."\(^{266}\) The argument for this stricture is simply Goodman's problem of imperfect communities from The Structure of Appearance. Hence, there is no need to go through the argument again and only the seventh stricture will be addressed in this section along with Goodman's attack on the objectivity of resemblance.

\(^{265}\)In this section, 'similarity' is taken to have the same meaning as 'resemblance.' Nothing hinges on the use of 'similarity' or 'resemblance' and the term 'similarity' is used here only because that is the term Goodman uses.

Goodman's seventh stricture is that "Similarity cannot be equated with, or measured in terms of, possession of common characteristics." Goodman's support for this stricture is as follows. He begins by asking when, in general, are two objects similar. One answer to this question is that two objects are similar when they have at least one property in common. In response to this claim, Goodman notes that since every two objects have at least one property in common, similarity will be a universal and hence a useless relation. It would be useless since there would be no two objects that are not similar and hence all objects would be members of the only resemblance class. Hence, there would be no way to provide an adequate solution to the problem of universals using such a resemblance account.

A second answer to this question is that two objects are similar when they have all their properties in common. Since, according to Goodman, no two objects have all their properties in common similarity would be an empty and therefore useless relation. One consequence of this view is that there would be only one resemblance class which would consist of all the objects which do not resemble one another (which would be all the objects there are). Hence, view of similarity would be useless in an attempt to provide a solution to the problem of universals.

A third answer is that two objects, \( a \) and \( b \) resemble one another more than two others, \( c \) and \( d \) if \( a \) and \( b \) have more properties in common than \( c \) and \( d \) do. Goodman rejects this account in the following manner. Imagine that there are three objects in the world. According to Goodman, any two of these objects will belong together in two classes and have two properties in common: "the property of belonging to the class consisting of the two things, and the property of belonging to the class consisting of all

---

three things. This argument can be generalized to cover cases involving any number of objects. If the number of objects in the universe is n, each two things will have exactly \(2^{n-2}\) properties in common out of the total \(2^n-1\) properties; each object has \(2^{n-2}\) properties that the other object does not, and there are \(2^{n-2}-1\) properties that neither object has. According to Goodman, if the universe contains an infinite number of objects, all of this figures become infinite and hence equal. If Goodman's argument holds, then resemblance will be a useless relation for every object would resemble every other object equally. If this were the case, then no resemblance based solution to the problem of universals could be successful.

Goodman's attack clearly rests on the assumption that the properties of belonging to classes are the only properties there are. If there are other properties, then Goodman's attack will fail: Imagine a world with three objects a, b, and c. Object a has A tropes, B tropes, and C tropes, object b has A tropes, D tropes, and E tropes, while object c has F tropes, G tropes, and H tropes. In this situation, a would have one member of the class of A tropes and b would also have a member of the class of A tropes, thus a and b would have one "property in common." Since object c does not have as constituents any tropes from the classes which a and b have tropes from, it follows that c has no "properties in common" with b and a. Thus, it would not be the case that in this world all objects have the "same number of properties in common."

Goodman has the following objection to this sort of reply: he asserts that identifying and distinguishing such properties "is a notoriously slippery matter" and hence the

---


270 For two objects to have a "property in common" is for those two objects to each have a trope from the same resemblance class as constituents. Of course, the two objects do not have a property in common in the sense of instantiating the same universal. This issue is discussed, in greater detail, below.

271 For two objects a and b to have "the same number of properties in common" is for the situation to hold: for any trope A of class N (for any A and for any N) that object a has, object b has a trope B of class N (for any B and for any N).

claim that resemblance can be measured in terms of the numbers of such properties. "273 What seems to be happening here is that Goodman is posing the boundary problem in the following manner: unless it can be specified exactly what the boundaries of tropes are, then the claim that the degree of resemblance between objects can be accounted for in terms of the number of tropes present need not be taken seriously. After all, until the boundary problem is solved, tropes cannot be numbered. If this is the general idea behind Goodman's assertions, then the objection is avoided by the solution to the boundary problem presented in chapter three. Since the boundary problem has been solved, tropes can be numbered and hence it is possible to account for and measure degrees of resemblance between objects in terms of the number of tropes present. On the trope-resemblance view, the resemblance between two objects, a and b, is function of the properties they have "in common." For a to have a property F "in common" with b is for a to have trope A of class F and b to have trope B of class F. Thus, the more respects two objects resemble one another in, the more they resemble one another. However, Goodman has a reply to this sort of attempt at avoiding his objection.

The trope theorist claims that two objects a and b resemble one another in respect F iff a has trope A and b has trope B and A and B are both members of the resemblance class of F tropes. The F resemblance class is formed on the basis of the resemblances that hold between tropes. Since tropes are, by hypothesis, simple, the resemblances that hold between tropes cannot be accounted for in terms of tropes they have in common. Goodman would object that "similarity is not definitionally eliminated here..." 274 and he would be quite correct since the trope-resemblance theorist must take resemblance among tropes as a primitive. That the trope-resemblance theorist does not offer a reductive analysis of resemblance is not an objection against trope theory, since every theory

requires primitives. However, accepting that resemblance is a primitive increases the cost of the theory and it must be shown that the pay off is worth the price. It will be argued later in this chapter that the pay off is worth the cost.

*The Non-objectivity of Resemblance*

Goodman claims that resemblance is relative, variable, and undependable. If this is the case, then resemblance is not the objective relation that trope-resemblance theory makes use of. He offers the following argument in support of his claims: Goodman claims that comparative judgments of resemblance involve the selection of relevant properties as well as the weighting of the relative importance of these properties and the variation in relevance and importance can be substantial in every shift of context and interest.275 Goodman offers two examples to serve as arguments for his claim that resemblance's between complex objects are not objective. His first example involves luggage at an airport baggage check. Spectators will notice such things as the shape, size, color, and make of the luggage, the pilot is concerned with its weight, and the passenger with the destination and ownership of the luggage. Goodman concludes from this that "Which pieces of baggage are more alike than others depends not only upon what properties they share, but upon who makes the comparison, and when."276 Goodman's second example involves three glasses of liquid. Two glasses have clear liquids in them and the third a red liquid. In this case a person looking at them would say that the first two resemble one another more than they resemble the third. But, suppose that one of the clear liquids is acid, the other water, and the red liquid is water with red food coloring in it and the observer is thirsty. In this case, the two glasses of water will be taken to resemble each other more than either resembles the acid. Goodman concludes that

---

"Circumstances alter similarities." But does this argument serve to show that resemblance is relative, variable, and undependable?

The general structure of the argument seems to be this: judgments of resemblance require the selection of relevant properties and their importance. Which properties are relevant and which properties are important depends on the context of the judgment and the interests of the person judging. Therefore resemblance is relative, variable, and undependable. While the first two premises of this argument are true (or at least plausible), the conclusion does not follow from them. At least, it does not follow without the assumption that resemblance is relative to the one making the judgment. Since making this assumption would beg the question, it cannot be taken as a premise in an argument aimed at establishing the relativity of resemblance. The only conclusion that can reasonably be drawn from the premises of the argument is that judgments of resemblance depend on the context and the interest of the person judging. This hardly shows that resemblance itself is relative.

That Goodman’s argument does not work can be established by an argument from analogy. Judgments about computer speed require the selection of relevant tasks and their importance. Which tasks are relevant and important depends on the interest of the computer user. Therefore, computer speed is relative and variable. For example, Bill may need a fast hard drive which computer A has, while Jill needs a fast graphics processor which computer B has. In this case, A will be the faster computer for Bill and B will be the faster computer for Jill.

However, the argument just given is flawed. The speed of each computer in each task is objective and can be measured with nano-second precision using objective tests. Hence, what should be
said is: A is faster than B in terms of hard drive access and B is faster than A in terms of graphic processing. A is the computer Bill needs because A is the faster computer in the respect (hard drive speed) he is concerned with. B is the computer Jill needs because it is the faster computer in the respect (graphics speed) that she needs. It should not be said, since it would be false, that the speed of a computer depends on the interests or needs of the person using it. Rather, the computer speed a person needs depends on the interests and needs of the person. Thus while which computer will be faster for a person's needs is relative and variable, computer speed itself is not relative or variable. What must be shown is that the analogy holds so that the argument given here applies to the case of resemblance.

If it can be argued that the resemblance in each respect between objects is objective, then Goodman's argument will fail. Take Goodman's three liquids example. If which liquid resembles the other more in respect to color and which liquid resemble the other in terms of chemical content are objective matters, then what should be said is: the clear water resembles the acid more than the red water in terms of color and the red water more in terms of its ability to quench one's thirst. If a person is concerned with color then she will take the acid and clear water to resemble more than either resemble the red water. A person who is concerned with the which liquids will satisfy her thirst (and not by killing her) will take the clear water and the red water to resemble each other more than either resemble the acid. It should not be said, since it would be false, that the resemblances between the glasses of liquid depend on the interests or needs of the person observing them. Rather, the resemblances they notice and consider most important depend on the interests and needs of the person. Thus, while which two liquids are judged by a person to resemble one another more than either resembles the third is relative and variable, which liquid resembles the other more than it resembles the third in a certain respect is not relative or variable.
Since this argument hinges on the claim that resemblances in certain respects are objective, this claim needs to be argued for to avoid begging the question. The argument that resemblance is objective is an argument from analogy involving identity. Both identity and resemblance are NE-relations (as argued in chapters two and three) and there is another similarity between identity and resemblance that will be used to make the argument run. It may be safely claimed that identity is independent of human thought and judgment, such that any existing entity would still be identical even if all human beings were to perish. Further, it also seems safe to claim that human interests and needs do not have a bearing on whether \( a = b \) or not. Now, in virtue of what are entities self identical? It cannot be, on the pain of a requirement regress (of the sort used in chapter three and elsewhere), due to some other entity (such as a property of being self identical). The most plausible answer is that an entity is self identical in virtue of being what it is and no other thing. In other words, the identity of any entity is grounded in that entity itself. It can be plausibly claimed that it is this fact that makes identity objective. Now, consider resemblance. In virtue of what do entities resemble one another? In the case of objects, it has been claimed that they resemble in virtue of the tropes they have. In the case of tropes, which have no more basic constituents, the most plausible response is that they resemble one another in virtue of what they are. Thus, resemblance, like identity, is grounded in the entities themselves. Since it is reasonable to accept that what entities are is independent of human interests, needs, and judgments, it is reasonable to accept that resemblance, like its cousin identity, is objective.

**The Ordered Simple Qualities Problem**

The closest Goodman comes to an attack on a trope-resemblance theory is his argument involving simple qualities whose resemblance is measured in terms of their orderings. The argument he offers is as follows. It may be claimed that qualities, like hues or pitches, resemble each other and that such resemblances are free of variations and the
relativity that stems from different selections and weightings of various properties. Since these qualities are, by hypothesis, simple (in the sense that they have no qualities of their own) one would suspect so. This is because a simple quality, A, can only resemble another quality in respect to one quality (the quality it is) and hence there will not be different qualities of A that can be weighted differently by different observers. Goodman claims that "similarity of so called simple qualities can be measured by nearness of their positions in an ordering, but they may be ordered, with good reason, in many different ways." 279 Goodman considers the case of the orderings of sensory qualities that are mapped by psychophysicists on the basis of the various tests they employ. To the claim that the results of such tests can serve as the standard measure of similarity among sensory quality, Goodman replies that "The laboratory results create rather than reflect a measure of sensory similarity. Like most systems of measurement they tend to govern ordinary judgments at least as much as to be governed by them." Thus, Goodman claims that an appeal can not be made to objective similarities based on tests and hence even the resemblance among simple qualities is relative to human judgments.

The general form of the argument seem to be this: resemblances hold between simple qualities that are ordered, such that qualities that are closer to one another in the ordering resemble one another more than those that are further apart. However, human beings can order various simple qualities in many different ways with good reasons. Therefore, resemblances that hold among ordered, simple qualities are relative to human ordering and hence the resemblances among simple properties are not objective. There are two serious problems with this argument.

First, Goodman's argument either fails to support his conclusion or it supports his conclusion by begging the question. The arguments for this claim are as follows. The first

---

premise seems plausible enough. If there are mass tropes of various values, a 1M mass trope (where M is some unit of mass) will resemble a 2M mass trope more than it will resemble a 10M mass trope. The second premise seems correct. For example, various hues can be ordered in many ways: in terms of how much a person likes them, in terms of how useful they are in making life rafts visible to would-be rescuers, and so forth. All these are good reasons to order these simple qualities in various ways. However, the conclusion, that resemblance among ordered simple qualities is relative to human ordering and hence resemblances among simple qualities, does not follow from the first two premises. What is needed is a premise to the effect that resemblance among simple qualities is determined by their ordering and that all orderings of simple qualities are human dependent. These orderings would be human dependent in the sense that they depend upon human judgments which are influenced by humans needs, interests, and perceptual capacities. Establishing this essential premise requires 1) an argument supporting the claim that simple qualities resemble each other in virtue of their ordering and 2) an argument to the effect that there are no objective orderings of simple qualities.

The first requirement is subject to the following argument. In chapter two it was argued that resemblance is an NE-relation. Hence, the resemblances that hold between any two entities depends on what these entities are (their natures). The nature of simple qualities cannot include their place on an ordering. Since the simple qualities are simple, they have only one aspect to their nature. For example, a hue would just be a hue and nothing more. In order for the nature of a quality to include its position in an ordering, the quality of being at position P in ordering O would have to be part of the nature of the quality. However, since the qualities in question are simple and not complex, they cannot have such a quality as part of their nature. Thus, resemblance of simple qualities cannot depend on their position in an ordering if resemblance is a NE-relation.
The second requirement is subject to the following argument. What is needed is a premise to the effect that all orderings are human dependent and that all of these orderings are equally valid. Resemblance orderings are clearly orderings, so what needs to be established, for Goodman's argument to succeed, is that resemblance orderings are human dependent in the sense that they are relative to human judgment. However, this is the conclusion that Goodman is arguing for and the conclusion of an argument cannot serve as a premise in that argument without begging the question. Thus, either Goodman's argument does not support his conclusion or it supports his conclusion by begging the question at hand.

Second, there being objective resemblances holding between ordered simple qualities is perfectly compatible with the truth of the first two premises. Suppose that there are objective orderings of simple properties in virtue of the resemblances that hold between them. If this is the case, then the degree of resemblance can be measured in terms of the proximity of the qualities to one another on an ordering. This is obviously compatible with the premise that resemblances hold between simple qualities that are ordered, such that qualities that are closer to one another in the ordering resemble one another more than those that are further apart. It is also compatible with the claim that human beings can order various simple qualities in many different ways with good reasons. Consider an analogy involving numbers. Human beings can order numbers in various ways based on their needs and interests. For example, a person choosing a combination for her lock can order 1, 27, and 33 in the following manner: 33 first, 1 second, and 33 third. However, this is perfectly compatible with their being an objective ordering of numbers in terms of their being larger (or, smaller) than one another. The same is true of tropes. Suppose that hue trope A resembles hue trope B more than hue trope C. This is perfectly compatible with a person ordering them on the basis of how much he likes them. For example, he might like B the most, C next, and D least. Or, a race could be imagined that could see
hue A better than it could see C, it could not see B at all. In such a case, the order the race would give of the hues in terms of the ease of being seen would be A, C, and then B. This would be compatible with A objectively resembling B more than C. Since the denial of Goodman's conclusion is compatible with the premises he uses to argue for his conclusion, it seems reasonable to reject the argument he gives. Given the two serious difficulties with Goodman's argument, it is reasonable to conclude that his attack fails to create a problem for the trope-resemblance theory being defended.

5.6 Tropes and Resemblance

On the view being defended, the world is composed, in part, of tropes. These tropes are divided up into various classes on the basis of the resemblances that hold between them. As noted in chapter two, resemblances come in many degrees and it is this feature of resemblance that will be exploited in the trope-resemblance solution to the problem of sameness. Proposed solutions to two of the sub-problems of the problem of sameness have already been presented. First, the trope-resemblance theorist's answer to the question what is it for a complex entity a to be F is that a is F iff a has an F type trope as a constituent. What it is for trope \( t \) to be F is simply for trope \( t \) to be F. These positions were argued for in chapters three and four. Second, the proposed solution to the problem of determinables is that various determinate tropes are grouped into "determinable" classes based on the resemblances that hold between them. This solution was discussed in chapter four. The success of trope-resemblance theory in solving these problems contributes to the pay off of the theory. Hence, the cost of accepting a primitive resemblance along with tropes has been substantially offset. The remaining task is to provide a solution to the main problem of sameness, which requires an answer to the question: what is it for two tokens to be of the same type? If this task can be completed, trope-resemblance theory will accrue yet another pay off in terms of philosophic work done and it will be even more reasonable to accept a trope-resemblance theory.
In very general terms, two tokens of type $F$ are of the same type, $F$, when they resemble one another in respect $F$. Of course, this answer is much too vague to be anything but a starting point. The reduction of the vagueness will begin with a consideration of what it is for two tropes to be of the same type.

On the view being defended, two tropes are of the same type iff they resemble one another. Since resemblance admits of degrees, tropes can resemble each other in varying degrees and these resemblances serve to group tropes into various resemblance classes. Each resemblance class constitutes a type. These classes will have varying degrees of homogeneity and as such, the classes will constitute more or less restrictive types. The least restrictive resemblance class will be the class of all tropes. These tropes all resemble one another in the respect that they are all tropes. There will be other classes with various degrees of unity. For example, the class of color tropes will have a higher degree of unity than the class of all tropes and the class of green tropes will have a higher degree of unity than the class of color tropes, and so forth. All these classes correspond to what would be best described as determinable types, which were discussed in chapter four. The classes with the highest level of resemblance will be the mutually exclusive exact resemblance classes.

Because exact resemblance is symmetrical, transitive, and reflexive, entities which resemble one another exactly will form mutually exclusive equivalence classes. Hence, tropes which exactly resemble one another will form equivalence classes. An equivalence class of tropes can, as Armstrong notes, serve as a substitute for a universal. For example, the class of blue tropes would serve as a substitute for the universal of being blue. Because equivalence classes of tropes can function as ersatz universals, this is yet another reason to accept tropes over universals. After all, if tropes can do all the work of

---

281 This point was argued for in chapter four.
universals (as Armstrong himself admits) and theories of universals are saddled with serious difficulties, why accept universals?

The fact that equivalence classes of tropes can function as ersatz universals also helps to undercut some of the motivation to accept universals. Among the strongest motivations for accepting universals is the intuitions that objects of the same type have "something in common" and that predication is a process in which the same, identical thing is being predicated of many objects. These philosophic intuitions are in turn motivated by common intuitions that objects of the same type are the same in some way. For example, in everyday talk people speak of two apples both being the same color. If these intuitions can be accounted for by, and shown to compatible with, trope-resemblance theory, then the universal theories will have some of their motivation drained away, leaving them in a weaker position relative to trope-resemblance theory.

The intuition that objects of the same type "have something in common" can be accounted for nicely without an appeal to universals. What objects of the same type have "in common" is that each object of type F has a member of the class of F tropes as a constituent. So, in each case where the universal theorist would claim that there are multiple instantiations of a universal in various objects, the trope theorist would claim that the various objects in questions each have a different member of a class of exactly resembling tropes as constituents. It may be objected that "having something in common" involves the sharing of one and the same thing. In certain cases, this makes sense. For example, a husband and a wife may have a house in common. In such a case there is a clear instance in which one thing is shared. However, consider this situation. If Bill owns a Macintosh SE/30 computer, then he has that in common with all other SE/30 owners. However, it is clearly not the case that all SE/30 owners share one and the same SE/30, especially since each SE/30 is likely to be quite different. In such cases, it is more reasonable to accept that talk of "having something in common" is actually talk about
resemblance. So, "having something in common" clearly does not mean the same thing as "sharing something identical." Since "having something in common" can be legitimately interpreted as a claim about the sharing of something identical as well as cases of resemblance, it can be concluded that my trope-resemblance view can easily account for this intuition at least as well as the universal theorist. Thus, the universal theorist can claim no advantage here.

The intuition that predication is a process in which the same, identical thing is being predicated of many objects serves as a motivation for accepting universals over tropes. This intuition is, in turn, backed by the ease with which universal theorists can provide accounts of predication. However, since classes of exactly resembling tropes can function as ersatz universals, as both Moreland and Armstrong admit, the trope theorist will have no more difficulty than the universal theorist in providing an account of predication. Thus, this motivation is undercut and the universal theorist can claim no advantage over the trope theorist here.

5.7 Complex Entities and Resemblance

Like tropes, complex entities resemble one another in varying degrees. However, the resemblance of complex entities is, in many ways, a much more complex matter than the resemblance of tropes. That this is the case should hardly be surprising, since complex entities are complex and tropes are simple entities. In this section various aspects of resemblance between objects will be discussed in order to clarify the proposed solution to the problem of universals at the level of complex entities.

---

282 According to Professor Bob of the Ohio State University, during the course of a discussion of tropes in the context of my General Examination.
283 See above in this chapter for Armstrong's position and chapter four for Moreland's attempt to use this fact as an argument against accepting tropes.
284 See chapter four for the argument.
285 Complex entities are substances, which consist of a single substratum and the tropes it binds, and objects, which consist of one or more substances that are bound together. As such, all substances are objects, but not all objects are single substances.
As has been argued above, the resemblances that hold between complex entities are ultimately grounded in the tropes that serve as constituents of these complex entities. On the view being presented, for complex entity \( a \) to resemble complex entity \( b \) in respect \( F \) (where \( F \) is a property) is for \( a \) to have a trope that is a member of the class of \( F \) tropes as a constituent and for \( b \) to also have a (different) trope of the class of \( F \) tropes \( F \) as a constituent. For example, a blue marble and a blue sky both resemble each other in respect of blue. Thus, (assuming that colors are actually tropes) both the sky and the marble would have blue type tropes as constituents. It should also be noted that since resemblance comes in degrees, resemblance in respect \( F \) will also come in a variety of degrees. For example, the sky and marble in the previous example will resemble one other in many determinable respects. Staying within the context of color, both the marble and the sky will resemble one another in respect of both being colored objects. All that is required for them to resemble one another in this respect is for both of them to have color tropes as constituents. The sky and the marble would also resemble all other colored complex entities in this respect. Both the marble and the sky will also resemble one another in respect to being some shade of blue. The sky and the marble will also resemble other blue complex entities in this respect. There will be greater and greater degrees of resemblance until the highest degree of resemblance possible is reached, namely exact resemblance. In this case, if the sky and marble exactly resemble each other in respect to their colors, then the sky and the marble would each have as constituents (different) tropes from an exact resemblance class. In cases of exact resemblance, the resemblance is in terms of a determinate aspect. Thus, like tropes, complex entities will be grouped into resemblance classes of varying degrees of resemblance in certain respects. This grouping capacity of resemblance hinges on the tropes endorsed by the trope-resemblance theorist. After all, as has been argued extensively above, without tropes the required fine grained account of resemblance in respect to \( F \) would simply not be possible.
Of course, it is not just the case that complex entities resemble one another in only one determinable or determinate respect. In most, if not all cases, complex entities will resemble each other in many respects. For example, a red ball and a red apple will resemble each other in respect to shape, color, density, mass, and so forth. However, such cases are no problem for trope-resemblance theory. Each case of resembling in a certain respect is just that: a particular case of resembling in a certain respect. Therefore, when two complex entities resemble each other in n-respects, there are n cases in which the complex objects each have as constituents (different) members of a resemblance class of tropes. As such, it is being claimed that the total resemblance between any two complex entities reduces to individual cases of those entities having as constituents (different) members of various resemblance classes of tropes.

On the view being presented, the overall degree of resemblance that holds between two complex entities will be a function of two main factors. The first factor is the number of resemblances in certain respects that hold between them. Since complex entities resemble each other in respect F iff both entities have a different member of the class of F tropes as constituents, it follows that two complex entities will resemble each other more when they have more entities that resemble one another as constituents. For example, suppose Otto had a set of colored children's blocks and he built three things each with three blocks as constituents. Suppose he built two objects that each had their own red, blue, and green blocks as constituents and a third thing that had three blue blocks as constituents. In this case, the first two things would resemble each other more than the third, because they have more "things in common". The second main factor is the degree of resemblance that holds in each individual case of resemblance in a certain respect. The higher the degree of resemblance in each particular resemblance in a certain respect, the higher the overall resemblance between the two complex entities. For
example, if a and b resembled each other in ten respects and a also resembled b in 10 respects, if the various resemblances in certain respects which held between a and b were greater in degree than those that held between a and c, then a would resemble b more than it would resemble c. This position is quite plausible. The higher the degree of the resemblance that holds between the constituents of two things, the more the things will resemble one another. In many cases (perhaps even all), the degree of resemblance will be superfluous. This is because the higher the degree of resemblance that holds between the constituent tropes of two complex entities, the higher number of respects the two entities will resemble each other in. For example, consider a case involving three objects that are different only in that two are blue and one is red. In this case, all three objects will resemble each other in respect to being colored objects. However, the two blue objects will also resemble each other in (at least) one more respect, namely that of being blue. Alternatively, there will be a higher degree of resemblance between the blue tropes of the two blue objects than between the blue tropes of any one of the blue object and the red tropes of the red object.

Complex entities are grouped into resemblance classes on the basis of the degrees of resemblance that hold between them. As with resemblance classes of tropes, resemblance classes of complex entities will have varying degrees of homogeneity. The class with the lowest degree of homogeneity will be the class of all complex entities, while the classes with the highest degree of unity will be those which contain complex entities which have as their constituents exactly resembling tropes. In between the class of all complex objects and the classes of exactly resembling objects will be many classes of varying degrees of unity. Fortunately, the question of which specific resemblance classes of complex objects there are is one that need not be answered at this point. According to the trope-resemblance theorist, there are resemblance classes but a trope-resemblance theorist can be neutral about what resemblance classes there are.
Given the results of this section, it can be concluded that trope-resemblance theory provides an adequate solution to the problem of sameness at the level of complex entities. This contributes substantially to the value of trope-resemblance theory and serves as another reason to accept a trope-resemblance theory.

5.8 Conclusion

At the start of the chapter it was argued that the cost of accepting a primitive notion of resemblance along with tropes is worth the price because of the pay off. In the above sections it has been argued that trope-resemblance theory avoids the traditional objections against resemblance-based attempts to solve the problem of universals. More importantly, it has been argued in this chapter that the trope-resemblance theory being presented provides solutions to all aspects of the problem of sameness. Thus, the pay off certainly seems to be well worth the price. Hence, trope-resemblance theory is the most plausible solution to the problem of sameness at this time.

In light of these results, it is concluded that tropes and complex entities are grouped into a wide variety of resemblance classes. There is in the world a complicated web of resemblances overlapping and criss-crossing, with resemblances of varying degrees connecting and dividing the constituents of this world. As noted above, human beings group complex entities into a variety of types and orderings on the basis of resemblances they perceive and "resemblances" that they believe they perceive. These groupings are also heavily influenced by the context in which the judgments are made. For example, students in a geometry class would be likely to group oranges and baseballs and brownies and erasers on the basis of shape, while during the class break the hungry students would be likely to group the brownies and apples together apart from the baseballs and erasers. However, the resemblances that there are and the resemblance classes they form are purely objective and quite independent of the classifying minds of humanity.
5.9 Final Remarks

The main point of this work has been the presentation and defense of a trope-resemblance solution to the problem of universals. In chapter one the problem of universals was laid out and it was shown that the problem is both legitimate and important. Chapter two presented the master argument for accepting tropes: there is an exhaustive competition class of plausible solutions to the problem of universals and of these proposed solutions, trope theory has the best cost-benefit ratio and is, hence, the most plausible theory to accept. In chapter three substances, substrata, and space-time were considered. In the course of the chapter arguments were presented for the acceptance of substances (construed as groups of tropes bound together by compresence relations), the acceptance of space-time as a distinct ontological kind, and the rejection of Campbell style field tropes in favor of more restricted tropes. Chapter four had two main focuses. The first of which was the defense of trope theory from a variety of attacks and the second was the consideration of what sorts of tropes should be accepted. In the course of the chapter, it was determined that trope theory can handle the problems it faces and the objections made against it. It was also determined that disjunctive tropes, negative tropes, uninstantiated tropes, and determinable tropes should not be accepted. Like chapter four, chapter five also had two main focuses. The first focus was on the defense of resemblance from a variety of attacks and the second was the presentation of a trope-resemblance solution to the problem of sameness. It was argued that a trope-resemblance account should be accepted because such an account avoids the problems faced by other (non-trope) resemblance theories and it provides an effective solution to the problem of sameness.

The trope-resemblance theory put forth in this work, like any proposed solution to the problem of universals, has a cost. This cost includes the price of accepting two basic
ontological kinds, namely tropes and space-time, as well as four primitives, namely resemblance, individuation, compresence, and particularity. However, the cost of accepting trope theory is offset in many ways. The ontological price tag of accepting tropes is mitigated by the fact that doing without properties in the name of economy precludes an adequate solution and accepting universals and their associated difficulties makes them more costly than tropes. Thus, tropes are the most plausible and economical choice. The ontological cost of accepting space-time realism is mitigated by the fact that space-time realism is endorsed by the best current physics and the fact that the best developed competing views to the theory put forth in this work (namely those of Armstrong, Campbell, and Lewis) also include space-time realism. The price of accepting primitive notions of resemblance, particularity, compresence, and individuation are offset by the fact that a primitive notion of individuation is required by all proposed solutions to the problem of universals, by the fact that resemblance seems both indispensable and unanalyzable, the fact that no one has an adequate account of compresence/connections among properties, and the fact that a primitive particularity or a corresponding primitive universality (or both) is required by the competing theories. Of course, the low cost of trope theory alone does not make it worth accepting. After all, something that costs little but is of very little use would hardly be worth purchasing.

The trope-resemblance theory put forth in this work yields numerous benefits which make the price of acceptance worth paying. The most prominent benefit of accepting trope-resemblance theory is the fact that it provides an effective solution to the problem of universals. The general problem of what it is for two tokens to be of the same type $F$ is, on the view put forth in this work, for the two tokens to resemble one another in respect $F$. Ultimately, what it is to resemble in respect $F$ will be accounted for in terms of tropes and their positions and arrangement in space-time. For one token to be $F$ is for that token to be an $F$ and being an $F$ is, ultimately, accounted for in terms of tropes and their
positions and arrangement in space-time. The general problem of what it is for two tokens of type F to be two distinct F tokens is ultimately accounted for in terms of tropes and spatial-temporal (dimensional) boundaries. A second general benefit that trope-theory offers is that the solution it provides to the problem of universals provides a starting point and a framework from which other theorists can work on specific problems regarding types and individuation. Examples of such problems include the individuation of events, personal identity, and working out accounts of social and political relations in a philosophic context. Of course, the actual pay offs trope theory receives in these areas will have to wait for the work to actually be done. At this point, trope theory is currently being put to use in working out an account of social and political relations and the results have been quite fruitful. 287 There does seem to be every indication that trope-resemblance theory will be quite useful. Thus, in return for the price paid, trope-resemblance theory receives a substantial pay off. Thus, trope-resemblance theory seems well worth the cost and hence, well worth accepting.

287Personal correspondences between the author of this work and Prof. D. Porpora of Drexel University.
APPENDIX

COMPETITION

A.1 Introduction

In the preceding work, a methodology was extensively employed but only briefly discussed. In this appendix, the details and mechanics of the methodology will be presented. This presentation fulfills two purposes. First, it explicitly spells out the methodology used to make clear what methodological commitments are operative in the work. Second, it makes good on the claim in chapter one that an adequate methodology can be provided for solving the problem of universals.

It is contended that doing metaphysics involves three main steps. The first step is selecting a metaphysical problem or a group of related metaphysical problems. The second step is the generation of a theory aimed at solving the problem or problems. The third step is the assessment of the theory in comparison with other theories that are aimed at solving the same problem or problems. This part of the process is the focus of this appendix.

A.2 Competition

When discussing competition between metaphysical theories it is important to keep in mind that these theories do not just compete, like animals battling in the wild, but that they compete relative to a specific domain. Initially, the domain of a theory will be the problem or problems it is aimed at solving. Thus, theories will compete relative to the problem or problems they are created to solve.

In order to enter a competition relative to a domain, a theory must be at least internally consistent. This is because a theory which is not at least internally consistent
has no viability as a competitor. Actual competition between two theories begins when
the following conditions are met. First, the two theories, both of which are internally
consistent, purport to solve the same problem or problems which constitute domain D.
Second, there is a relation between the two theories which precludes rationally accepting
both of them as correct.

*The Principle of Uniformity and the Need for Competition*

The competitive methodology put forth in this appendix rests ultimately on one claim:
any particular metaphysical problem has only a single correct solution. The truth of this
claim entails that any theories proposed to solve a particular problem or problems will be
in competition with one another. This is because there can be, at most, only one correct
typeory. Ideally, through a series of competitions, the single correct theory can be
determined. Realistically, the best that can be hoped for is that the most plausible of the
competing theories will be determined. This is because, given human limitations, it is
likely that all proposed theories are defective to some degree and because the
methodology being proposed is an inductive one.

The claim that there can only be one correct solution to any particular metaphysical
problem is an extremely strong claim and one that can be challenged. It might be argued
that metaphysics need not involve competition. It might be claimed, for example, that
every internally consistent theory is correct (or at least that many of them are).\(^{288}\) A theory
might not be correct about this part of the world, but it might be correct about another
part of the world. Taking this position would involve accepting what is best called the
Principle of Non-Uniformity:

Principle of Non-Uniformity (PN): The world is metaphysically disjoint or diverse.
the set of basic entities, principles, and primitives of one area of the world are
not the same as those of all other areas.

\(^{288}\) It might be argued that even internally inconsistent theories could be correct, but this seems wildly
implausible.
It is clear that if this principle is correct, then each metaphysical problem might well have many correct solutions. For example, consider the problem of universals. If PN is correct, then it might be the case that one area of the world contains tropes, another universals, another universals and substrata, and yet another region might contain tropes, universals, and substrata. In this situation, there would be four correct solutions to the problem of universals. Thus, it would seem that if PN is accepted, then there is no need to accept a competitive methodology.

However, this is not the case. Even if PN were correct, there would still be the need to determine which theories are correct about which areas of the world. Hence, each theory proposed to solve a particular problem or problems for one area would stand in competition with other theories proposed to solve the same problem or problems in that area. Thus, even if PN is correct, there would still be a need to accept a competitive methodology. While competition seems unavoidable, what remains to be argued is that there is only one correct solution for each specific metaphysical problem.

In order to argue against PN, a competing principle, the Principle of Uniformity, will be defended. This principle, which is a version of Campbell's Axiom of Uniformity\(^{289}\), is as follows:

**Principle of Uniformity (PU):** The world is not metaphysically disjoint or diverse.

The set of basic entities, principles, and primitives of one area of the world are the same as those of all other areas.

The argument for accepting PU over PN is as follows: PU is more intuitively plausible than PN. Intuitively, it is reasonable to accept that the basic metaphysical entities, principles, and primitives are the same throughout the world. There simply do not seem to be any intuitively plausible reasons to believe otherwise. Of course, pre-philosophic intuitions are not always correct. However, these intuitions are supported and confirmed

---

by the best scientific theories of this time. Modern astronomy and physics indicate, quite clearly, that the universe is uniform in the relevant sense. These scientific theories are, in turn, supported by the best available evidence: data from space missions, telescopic and radio observations, spectral analysis, and a variety of other means. All of this evidence points towards a universe with uniform constituents. Given the evidence, if the universe is metaphysically disjoint, it certainly isn't disjoint in any detectable manner. Hence, modern scientific theory supports PU and clashes with PN. Since there are good, solid, empirical reasons to accept PU over PN, PU should be accepted.

If PU is correct, then there can be, at most, only one correct solution to a particular metaphysical problem. Because of this, all internally consistent theories which are proposed to solve the problem will be in competition with one another. This is because of any two proposed theories, at most only one of them is correct.

*The Two Types of Competition*

Given that there can be only one correct solution to any particular metaphysical problem, there are two varieties of competition that can take place between theories T1 and T2 relative to the domain, D, of the problem or problems they purport to solve:

**C1:** T1 and T2 compete relative to D just in case T1 and T2 cannot both be correct, but both cannot be false.

**C2:** T1 and T2 compete relative to D just in case T1 and T2 cannot both be correct, but both could be incorrect.

C1 competitions arise when the statements which compose T1 contradict (directly or indirectly) those which compose T2. Because of this, if T1 and T2 stand in a C1 competition, then either T1 or T2 is correct and the other is false. Hence, there are two ways to resolve a C1 competition. First, if one theory is shown to be correct, then the other theory will be shown to be incorrect. Second, if one theory is shown to be incorrect,
then the other theory is shown to be correct. Thus, the resolution conditions of C1 competitions are quite clear and a C1 competition that is resolved will reveal which of the two theories is correct.

As noted above, C1 competitions only arise in cases in which the statements which compose one theory (directly or indirectly) contradict those of the other theory. Typically, this will involve one theory being the negation of the other. For example, one theory might include the claim that there are universals while the other would involve the claim that there are no universals. In such cases, the competition will simply be a case of determining whether a theory or its negation is correct. If it turns out that the theory is correct, then the problem or problems are solved. If it turns out that the negation is correct, then it would be shown that the theory did not solve the problem or problems, but the problem or problems would remain unsolved. For example, if the theory which claimed that universals exist were shown to be incorrect, then the problem of universals would remain unsolved.

Given the nature of C1 competitions, it is (in principle) possible to solve a philosophic problem using the following method. In step one, a theory is generated along with its negation. In step two, competition between the two theories takes place to determine which is correct. If the theory is correct, then the problem is solved. If not, then steps one and two are repeated. The rather obvious difficulty with this method is that it requires testing of each possible theory until the correct one is found. Even if the implausible theories are dismissed, finding the correct theory by this method (without a great deal of luck, a stroke of genius, or divine intervention) is bound to take a great deal of time and effort. While it is possible that the correct theory can be found using this

---

291 Of course, if there is more than one correct solution to a problem, the competition would continue until they were all found.
method, it is rather unlikely. Thus, given human limitations, it is not a very effective method to adopt.\textsuperscript{292}

C2 competitions occur when T1 and T2 cannot both be true, but can both be false. While showing that one theory is correct does show the other theory to be correct, showing one theory to be incorrect does not show that the other is correct. This is because both theories could be incorrect. Hence, there is one way to resolve a C2 competition. This is to show that one theory is more reasonable to accept as correct than the other.

In order to solve a philosophic problem through C2 competitions, the following method is employed. First, a theory, T, is generated which is aimed at solving a particular problem or problems. Second, an exhaustive competition class is constructed of plausible theories which are aimed at solving the same problem or problems as T. Ideally, this class would contain all plausible theories,\textsuperscript{293} but realistically it can only be expected to contain the most plausible theories currently available and this would suffice to make it a (reasonably) exhaustive competition class. Third, T competes with each member of the class in turn until it has competed with all members of the class. If T is found superior to all other members of the class, then T should be accepted as the most reasonable theory to accept. This methodology is used in chapters two and three of this work. In these chapters, the various theories which were aimed at solving the problem of universals were examined and found lacking relative to trope theory. Hence, it was concluded that the trope-resemblance theory put forth in this work is the most reasonable theory to accept at the current time. The success of the previous work indicates that this sort of method is well worth accepting.

\textsuperscript{292}Provided the proper programs could be written, this would be an effective method for a powerful computer. As long as it had enough information and raw processing power, such a machine could conceivably solve philosophic problems in this manner.

\textsuperscript{293}To be completely ideal the class would actually have to contain all possible theories which are internally consistent. However, this far exceeds human capabilities.
However, it should be noted that this method suffers from defects. First, the method will only select the best theory out of the competition class. If the correct theory is not in the class, the winner of the competition will not be the correct theory. Second, as will be shown below, the method of assessing competition is inductive and partially subjective. This means that even if the correct theory is in the competition class, it still may not be selected by those making the assessment. Despite these flaws, this method does seem reasonable to accept, at least until a superior alternative is offered.

Finally, conditions of competition are subject to change. These conditions can change in a variety of ways. One such case is when a theory is found to have implications for a problem or problems outside of its initial domain. For example, T1 may purport to solve a set of problems which compose domain D1. This places T1 in competition with all theories that purport to solve problems in domain D1 (assuming that the other conditions of competition are met). Later, it may turn out that T1 has implications for problems in another domain, D2. Assuming the other conditions of competition are met, this would put T1 in competition with all other theories which purport to solve problems in D2. A second case of when the conditions of competition change are situations in which new theories are generated. For example, T1 might be found to be the best theory out of all proposed theories at time A, but at time B a new theory that competes with T1 is generated. In this case, T1 must "take on" the newcomer to determine if T1 is still the most reasonable theory.

A. 3 Methodology: Costs

It is contended that theories which are competing relative to a domain D, in either the C1 or C2 sense, are assessed relative to one another in terms of their costs and benefits. The cost of a theory, which is analogous to the cost of buying a consumer good, is assessed in terms of a variety of factors: the defects it suffers from, the intuitive plausibility of its entities, primitives, and principles, and certain other factors. The
benefits of a theory are assessed in terms of the problem(s) it solves, the explanation(s) it offers, what implications it has for other problems, and other factors. In general, the theory with the best cost to benefit ratio at time T1 will be the most plausible theory to accept at that time.

*Generation Costs*

The generation cost of a theory depends on the cost of the primitives, principles and entities which are accepted by the theorist. When assessing the cost of a theory's primitives, principles, and entities, there are four factors to be considered. The first is the intuitive plausibility of the primitives, principles, and entities of the theory. The greater the intuitive plausibility of these theoretical elements, the lower the cost of the theory will be. This factor rests on the assumption that human intuition is a useful, if somewhat rough, method of assessing theories. The second factor is that mysterious and unclear primitives, principles, and entities of a theory will increase the cost of a theory such that the greater the mystery and lack of clarity, the greater the cost of the theory. Since philosophic theories are intended to clarify mysteries and increase human understanding, the more mysteries a theory leaves unsolved (or actually generate), the less intellectually desirable such a theory will be. Hence, such a theory will be more costly to accept. Third, the less compatible the theory's primitives, principles, and entities are with well established theories, the greater the cost of the theory. This is due to the fact that conflict between the theory in question and well established theories provides a good inductive reason to reject the new theory, which is an initial mark against that theory. Finally, the fewer reasons and needs there are to accept the primitives, principles, and entities of a theory, the greater the cost will be of that theory. This factor rests primarily on Occam's

---

razor, which enjoins philosophers to posit no more entities then are needed. In this case, philosophers should include within their theories no more primitives, principles, and entities than they have good reason to accept on the pain of increasing the cost of their theories.

The general idea underlying generation costs is that a theorist pays a certain price for "building materials" which she used to construct her theory. The idea is, naturally enough, to get the most philosophic work from the least expensive building materials as possible. David Lewis describes this sort of methodology as paying a cost in the coin of ontology for an improvement in what Quine calls ideology. David Armstrong also takes this as his metaphysical methodology. On his view, the cost of a theory is largely determined by the number of entities and the number of kinds of entities that a theory contains.

As a final note, it should be understood that the generation cost of a theory will be an inexact assessment of the cost of the theory's primitives, principles, and entities. Such assessments admit of a high degree of subjectivity and this should be taken into account when employing this method. However, it is difficult to imagine a methodology which would (if employed by humans) be devoid of subjectivity. Hence, this method does not suffer from a special difficulty in this respect.

**Problem Cost**

The second major cost of a theory is a theory's problem cost. A problem is a difficulty, flaw, or defect that a theory suffers from or an objection against the theory. The greater the number of problems a theory suffers from and the greater their severity, the less intellectually desirable a theory will be. While the number of problems a theory

---


suffers from is an important factor in assessing the problem cost of a theory, equally important (if not more so) is the severity of the problems. Problems range in severity from those which are fatal to those which are mere nuisances. An example of a fatal problem is when a theory is self contradictory. An example of a mere nuisance would be an argument which showed that it is logically possible that the theory is false. Naturally, there are various degrees of severity in-between these two polar extremes. The severity of a problem depends, in part, on which aspect of the theory the problem applies to. For example, a very serious problem for a peripheral aspect of a theory may well only be a minor problem for the theory as a whole.

As with the generation costs, assessing the problem cost of a theory involves a degree of subjectivity. For example, what might be a reductio for one philosopher may well be embraced as a valuable implication of the theory by another philosopher. Since subjectivity seems unavoidable in any assessments, this is not a special problem for the methodology being presented.

A. 4 Methodology: Benefits & Assessment

**Benefit Value**

The benefit value of a theory is an assessment of the benefits the theory yields. The benefits of a theory include the explanations it provides, the problems it solves, and the contributions it makes in other areas outside of its initial scope. There are three main factors to be considered when assessing the benefits of a theory.

The first contributor to a theory's benefit value is its success in providing accounts and explanations of what it was generated to account for and explain. Metaphysical theories are constructed, in part, to provide explanations and accounts. For example, proposed solutions to the problem of universals offer accounts of what it is for two tokens to be of the same type. Given that one goal of metaphysical theorizing, as it is commonly
practiced, is to provide explanations and accounts, it follows that the better a theory does in these areas, the better the theory.

The degree of success a theory achieves in providing accounts and explanations determines the explanatory value of the theory. In general, the greater the number, importance, and quality of the explanations and accounts a theory provides, the greater the theory's explanatory value. A theory might also gain an increase in explanatory value should it turn out that the theory can provide explanations or accounts outside of its original domain. Of course, this expansion of a theory's explanatory domain might well put it in competition with a new set of theories.

There are two facts that should be kept in mind when assessing the explanatory value of a theory. The first is that such assessments are partially subjective. The second is that there is considerable disagreement as to what explanations and accounts are and exactly what it is to be a good explanation or account. However, as van Fraassen notes, there is substantial agreement as to what constitutes an account or explanations in cases involving concrete examples.\(^{298}\)

A second major contributor to the benefit value of a theory is its capacity to solve the problem or problems it was generated to solve. In general, the greater the number of solutions a theory solves, the higher the quality of those problems, and the more important the problems are, the greater the benefit value of the theory. While there is no exact formula by which to determine the problem solving capacity of a theory, and such assessments of such capacities are partially subjective, the notion of problem solving and the assessment of such solutions are well understood by those with sufficient philosophic experience.

The third factor that contributes to the benefit value of a theory is the contribution value of a theory. The contribution value of a theory is based on the useful contributions a

theory makes independent of the explanations it provides and the problems it solves in its original domain. The greater the number, quality, and importance of these contributions, the greater the theory's benefit value. An example of a contribution a theory might make is as follows: A particular metaphysical theory might be aimed at solving the problem of universals but it might also provide a basis for the individuations of actions or a basis for personal identity. However, the contributions a theory makes outside of its initial domain might place it in competition with a new set of theories. For example, the theory in the previous example would end up competing with other theories aimed at providing a basis for individuation or events or personal identity.

In specific cases, there might be other factors which contribute to or detract from the benefit value of a theory. Since all such factors cannot be adequately predicted in advance, they must be assessed when the time comes.

A. 5 Assessment

The process of assessing a theory involves several steps, each of which will be examined in turn. The first step in assessing a theory is to select a competition class whose members this theory will compete with. Ideally, this class will consist of all internally consistent theories which compete in the same domain as the theory under consideration. Pragmatically, this class will consist of the most plausible theories which compete in the same domain as the theory under consideration. Once the competition class has been selected, the theory will compete with each member of this class in turn.

Selecting one metaphysical theory over another is, in many ways, like selecting one product over another for purchase. The cost of the theory is analogous to the money one must pay for the product, while the benefit value of the theory is analogous to the qualities and usefulness of the product. While choosing between metaphysical theories is not as simple as choosing between brands of soup, the general idea is the same. In the case of commercial products, the goal is to get the most for one's money. In the case of
theories, the goal is to get the most benefit for the least cost. Because of this, the theory with the best cost to benefit ratio is the most reasonable theory of the competition class to accept. This ratio is determined by comparing the cost of the theory to its benefits and weighing them against one another. This process is a general assessment of how much benefit is acquired from each cost accrued. Since the process involves an unavoidable degree of subjectivity and it is an inductive method, there is always the possibility that the theory selected from the competition class as the most plausible theory will not be the correct theory. However, despite these flaws this method seems to be the best one available.

A theory can be the winner of a series of competitions in a variety of ways. The most straightforward way is for the theory to win is for it to have a greater benefit value and a lower cost than each of the other theories. Other cases will be less clear cut. For example, one theory may well have a greater benefit value than another theory but its cost may be far greater than its competitor. In such cases, selecting the winner from the competition class will require greater effort and careful assessment.

There are two common ways for a theory to fare poorly in competition. The first is for a theory to accumulate too great a cost relative to its benefits. This sort of difficulty can be dealt with by revising the theory in order to lower its cost, increase its benefit value, or both. Naturally, such revisions cannot be ad hoc. Such theory revision is common practice and is an important way in which progress is made towards the solution of philosophic problems.

A second common way for a theory to fare poorly is for it to have insufficient resources to generate an adequate benefit value. In such cases, the theory lacks sufficient resources to do the work required of it. Such theories can be revised by either upgrading their resources (for example, the theorist might accept an additional type of entity), or by downgrading the intended scope of the theory (for example, the theorist may decide to
reduce the intended scope of her theory's problem solving and explanation providing domain).

As with assessing commercial products against one another, assessing theories involves a degree of subjectivity. This subjectivity often arises from such factors as the interests and preconceptions of the philosopher judging the theory. While this subjectivity is an unavoidable aspect of this method, it is difficult to imagine a plausible methodology that would avoid this subjectivity.

Why Accept This Method?

The main reason to accept this method is a pragmatic one: it works. The support for this claim is the work that proceeds this appendix. If this method is successful in this project, then there is good reason to think that it will prove useful elsewhere. At the very least, it is reasonable to accept as a method for addressing the problem of universals.


