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Arda Denkel develops a unified ontology of objecthood, essences and causation. A principal tenet is that while the basic units of the physical world are substances, particular properties are the analytic ultimates of existence. Although properties must inhere in objects, individual things are nothing more than compresences of properties at particular positions. There exist no mysterious substrata. Principles explaining how properties are held together in compresences are basically the same as those that account for essences and for causal relations. There exist no objective universals. Denkel defends a thoroughgoing particularism and offers purely qualitative accounts of individuation, identity, essences and matter. Throughout, the main alternative positions are surveyed, and the relevant historical background is traced.

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Object and property

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Object and property

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CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE UNIVERSITY PRESS
Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore, São Paulo

Cambridge University Press
The Edinburgh Building, Cambridge CB2 8RU, UK

Published in the United States of America by Cambridge University Press, New York

www.cambridge.org
Information on this title: www.cambridge.org/9780521550109

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First published 1996
This digitally printed version 2007

A catalogue record for this publication is available from the British Library

Library of Congress Cataloguing in Publication data
Denkel, Arda.

Object and property / Arda Denkel.
p. cm. – (Cambridge studies in philosophy)
Includes bibliographical references and index.

ISBN 0 521 55010 6 (hardback)

1. Object (Philosophy) 2. Essence (Philosophy) 3. Causation.

I. Title. II. Series.

BD336.D46 1995

111 – dc20 95–6519 CIP

ISBN 978-0-521-55010-9 hardback
ISBN 978-0-521-04209-3 paperback

For Sir William and Lady Hayter

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Acknowledgements

I begin by expressing my gratitude to Michael Burke, who, in the late seventies introduced me to the perplexities of ontology. Our two years' association at Boğaziçi University has helped me much in familiarizing myself with some of the central debates of this field. I also thank him for commenting on an early draft of this study.

I have greatly benefited from the criticisms of a number of philosophers who have read and commented on earlier drafts of this book or on papers of mine some theses and arguments of which I use here. I gratefully acknowledge my debt to David Armstrong, İlham Dilman, Berent Enç, Elliott Sober, Dennis Stampe, Ümit Yalçın, and two of my Boğaziçi colleagues, Gürol Irzık, and Ali Karatay. I am grateful to the Department of Philosophy of the University of Wisconsin, Madison, for granting me the free use of some utilities for which I would otherwise have had to pay, and to many students at Boğaziçi and Madison, who by their questions have helped me to understand these issues somewhat better.

A greater intellectual debt is to Thomas Baldwin and Jonathan Lowe. The penetrating, constructive and, to say the least, highly expert criticism they offered me has been invaluablely helpful, and allowed me to refine and improve this book in many ways. Finally, I wish to thank the anonymous reader of Cambridge University Press for many stimulating comments.

Parts of the present text are related to some of my previously published papers. Thanking the editors of the relevant journals, I cite them:

- (1) 'Form and Origin', *Canadian Journal of Philosophy*, V. 15 (1985), pp. 653–62.
- (2) 'Matter and Objecthood', *Dialogue*, V. 28 (1989), pp. 3–16.
- (3) 'Real Resemblances', *The Philosophical Quarterly*, V. 39 (1989), pp. 36–56.

Acknowledgements

- (4) 'Principia Individuationis', *The Philosophical Quarterly*, V. 41 (1991), pp. 212–28.
- (5) 'Substance Without Substratum', *Philosophy and Phenomenological Research*, V. 52 (1992), pp. 705–11.
- (6) 'Artifacts and Constituents', *Philosophy and Phenomenological Research*, V.55 (1995), pp. 311–22.

I use material from (1) and (2) in chapter 5, from (3) in chapter 6, from (4) and (5) in chapter 3, and from (6) in chapter 4. I am grateful to Ginn Logical Services for giving me generous support in a variety of ways towards the preparation of my drafts. For stylistic help, I acknowledge the criticisms of Paula Ince, Elaine Miller, Virginia Sachloglu and Margaret Kirk. Finally, I thank my wife and daughter for having put up with me at home during the lengthy process of writing and revising this book.

1

Introduction

I.1 THE ANCIENT BACKGROUND

Interest in the problems of ontology has been constant throughout the history of systematic thought. Philosophy and empirical science virtually began with a handful of people's tackling some quite abstract metaphysical puzzles, and today, about twenty-five centuries later, philosophers still attack questions closely related to those that have initiated this fascinating enterprise. Although ontology in our era has a much richer content, abounding with a great variety of explanations, a highly subtler terminology and a remarkably deeper grasp of the matters concerned, like the rest of philosophy, it retains many of the fundamental assumptions first made by the Ancient Greeks, intuitively at first, and later explicitly and officially.

The present study concerns the nature of object, change and property. I propose to introduce my discussion of these issues by an informal sketch of the development of some of the earliest attempts made in the same direction. I am interested in looking into the way in which the relevant fundamental problems of ontology and the principal rational attempts to solve them first emerged. My descriptions are not intended to be historically complete (or perhaps even fully accurate), and I will allow myself some freedom of interpretation.

The earliest philosophers were bewildered by the fact of change. It is highly remarkable that they should have picked this one amongst so many unsolved and less abstract problems. In our ordinary waking life we encounter change perpetually, and simply take it for granted. It is through their various attempts to understand and solve the ostensibly paradoxical nature of change that ancient thinkers posed a number of other fundamental questions regarding existence. Emphasis on change is conspicuous in Heraclitus' thought. Plato reports him as claiming

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that 'everything moves and nothing is at rest'. Plato continues: 'and comparing existing things to the flow of a river he says that you could not step into the same river twice' (*Cratylus*, 402A. See also Aristotle, *Topics*, i, 11). If one central theme in Heraclitus is that everything changes all the time, another closely related and equally famous thesis concerns the unity of opposites: 'The path traced by the pen is straight and crooked'; 'In a circle beginning and end are common'; 'The way up and the way down are the same' (DK22 B59, B103, B60, in Robinson, 1968, pp. 93–4). 'And as the same thing there exists in us living and dead and the waking and the sleeping and young and old: for these things having changed round are those and those having changed round are these' (DK22 B88, in Kirk and Raven, 1960, p. 189). In the same entities opposites, that is opposite properties, exist together (Sextus Empiricus, 1990, pp. 80, 116), and 'All things come into being through opposition' (DK22 A1: from Diogenes Laertius, in Robinson, 1968, p. 89). What motivated Heraclitus to declare this? The answer is, I think, that Heraclitus was offering a solution to a puzzle he and his contemporaries had discovered, namely, the incompatibility of the manifest fact of change with the universally presupposed principle of the conservation of existence. The latter is the conviction that existence does not come out of nothing and that it does not get destroyed into the nought, and for the Ancient Greek mind this was an unassailable truth. Often denominated by its Latin expression *Ex nihilo nihil fit*, this axiom should not be confused with the causal principle that every change occurs with a cause. Leaving some religious doctrines aside, one may suggest that with a few exceptions a certain form of the *ex nihilo* is still right at the foundation of both the science and philosophy of today. Rather than being about what *begins* change, it concerns the novelty and the loss of existence that characterizes such aspects of the world. It rules that what seems novel is not generation out of non-existence, and what appears to be destroyed is not lost into non-existence. Yet in the empirical manifestation of what we call change, precisely what is prohibited by the principle seems to take place.

In our experience, change is the loss of a certain property along with the coming about of another, incompatible one, in its place. Upon change what was is no longer, and what is was not. A green pepper turns red; apparently, the green of the pepper is lost out of existence and a red colouring emerges on it, again speciously out of

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nowhere. If the *ex nihilo* does not permit loss and gain of existence into and from nothingness, how is the situation to be explained? Thus change seems to contradict the *ex nihilo* blatantly, and neither reason nor reality can allow such a thing.

There are two ways of resolving such a conflict, and in varying degrees both require reinterpreting what one perceives as change differently from the way it looks at first sight. Either one suggests that what appears to come about anew was already in existence (and conversely, what seems to be lost remains in existence), or, more radically, one declares the change perceived as altogether 'specious', and offers another account that describes what *in reality* happens behind the seeming fact of change. Both of these avenues have been pursued by the Ancient Greeks, in a diversity of ways. Like other Ionians, Heraclitus had a greater respect for the senses than the 'Italian' colonists, and opted for the former approach. Holding that opposites are within the same entities, he can solve the puzzle of change by proposing that just as the property 'emerging' anew was there within the thing all along, the property going out of appearance remains in it too.

Although perhaps less convincing than Heraclitus' solution, an alternative that holds the same respectful attitude towards what the senses show us is to propound that the property which seems to be lost goes into a stock, a reservoir of existence, and what apparently comes into being does so from the same medium. Identifying this medium with the 'indefinite' (apeiron) of Anaximander, we may interpret his account of change as above.¹

The philosophers of Elea would not have any of this. Parmenides rejected any theory that 'united' opposites on the grounds that it would be contradictory, and, in reaction to the apparent conflict between the *ex nihilo* and manifest change, he dismissed the latter as mere 'seeming'. Rejecting the Heraclitean solution to the puzzle of change he says that 'helplessness guides the wandering thought in their breasts; they are carried along deaf and blind alike, dazed, beasts without judgment, convinced that to be and not to be are the same and not the same, and that the road of all things is a backward-turning

¹ See Simplicius' testimony in Kirk and Raven, 1960, pp. 106–7. On the present interpretation, therefore, the apeiron is not merely an arché from which existence sprang initially and to which it will eventually return; in addition, the changing things of the actual world keep a perpetual exchange with it.

one. For never shall this prevail: that things that are not are' (DK28 B6, B7, in Robinson, 1968, p. 111). Parmenides enforces the *ex nihilo*, and concludes that if something exists, then it cannot fail to do so, since such failure would amount to the violation of the principle. Moreover, if something is not, then it is not going to become without the same consequence. But something either exists or not, and hence if it does, it ever was and will ever be, and if it does not, it never was and never will be. Change that appears to our senses is a logical impossibility; there isn't any such thing (DK28 B8, in Robinson, 1968, p. 113).

Parmenides' arguments have had a decisive impact, instigating the subsequent generation of non-Eleatic philosophers to look for solutions treating manifest change as illusory. These thinkers set forth theories that applied primarily to the invisible constituents of manifest things, explaining away what looks like the loss and gain of qualities in terms of the changing mutual relations of such immutable constituents. Accordingly, there is no 'real' becoming or destruction after all. What happens on a deeper and more fundamental scale appears to us as change.

Atomism is a striking example of this new type of approach. Although unrecognizably more sophisticated, our own day's physical science is a descendant of this theory. It was rediscovered by modern thinkers and scientists in the late sixteenth century, and developed thereafter. Ancient Atomism bears another important novelty that has emerged in post-Parmenidean philosophy. As part of their 'deeper' account of what reveals itself to us as change, philosophers of the era had to propose a relevant account of the constitution of ordinary things of the world we perceive. Democritus' idea is that objects are constituted by invisibly small indivisible and indestructible particles of various sorts, which move in the void. The aggregation of particles is, thus, what we perceive as the coming about of an object, and their dispersal is destruction. Every quality of the object is either a derivative of the qualities of the constituents, or of the way in which they combine, or is simply a subjective effect of such combinations on our sense organs. Another novel characteristic marking this explanation is its distinguishing qualities from the objects bearing them. Now properties such as colour and taste (namely what modern philosophy, and Locke in particular, called 'secondary qualities') are, accordingly, the effects in us of the various shapes of the atoms. Shape, size,

motion, on the other hand, are in the objects, for they derive from corresponding qualities that inhere in the constituent particles themselves. Others such as hardness derive from the density in which atoms cling together (see Aristotle, *Metaphysics*, i, 4; *On Generation and Corruption*, i, 2; Theophrastus, 1917, pp. 119–37). Thus apparent change receives a simple and effective explanation in the *motion* of atoms: aggregation, dispersal, variation in density, difference in configuration, or in the types of atoms, are all results obtained by their moving, and such modifications underlie the manifest changes in the world of our perception.

Along with Atomism in the fifth century BC, there were two other notable explanations of apparent change, both of which made appeal to the relation of deeper constituents. Reacting to the Eleatic criticism of change, Empedocles and Anaxagoras regarded ordinary things as mixtures of fundamental elements. They diverged in their views concerning the variety of the elements, and on the way in which these mix. It is likely that both regarded the elements as qualities, also conceiving of them substantially, without thus making the categorial distinction between objects and properties found in the Atomists (see Sorabji, 1988, p. 44). For Empedocles the elements are earth, water, air and fire, whereas for Anaxagoras they are as many as there are different qualities and kinds. Although historians of philosophy do not all agree, there seems to be reason for regarding both these philosophers' conceptions of object as of a mingling, an intermixture, of, if one prefers the term, a bundle of qualities. Empedocles declares that 'there is no real coming into being of any mortal creature, nor any end in wretched death, but only mingling and separation of what has been mingled, and "coming into being" is merely a name given to them by men' (DK31 B8, in Robinson, 1968, p. 158). Richard Sorabji regards Empedocles' theory as a forerunner of Atomism, in that perhaps unlike Anaxagoras, this philosopher 'opted for juxtaposition. He described elemental mixture in terms of undivided (albeit divisible) nuggets of earth, air, fire and water in contact with each other.'²

It is plausible to understand Anaxagoras' notion of an object as a blend of interpenetrating quality-stuffs at the same position.³ Since he

² Sorabji, 1988, p. 66. In a footnote, Sorabji lists references to Aristotle in support of such an evaluation.

³ Sorabji, 1988, p. 62, and pp. 61–5 for alternative interpretations.

declares that ‘in everything there is a portion of everything’ (DK59 B11, Robinson, 1968, p. 177), according to him the relative proportion of the presence of a certain quality in an object determines the manifest character and nature of this object (Aristotle, *Physics*, i, 4). In contrast with Atomism (and at least to a degree, unlike Empedocles) Anaxagoras does not regard any of the properties of ordinary entities as apparent. In his view, an object changes by the altering proportion of the mixture constituting it; change is possible because things contain already the element that becomes predominant. Furthermore, what seems lost in change is not lost actually; it remains within the object. Since in everything a part of everything else is contained, it follows that opposites, i.e., incompatible properties, too, coexist in an interpenetrated fashion. Anaxagoras does not explain how such a thing is possible. Whatever its advantages or difficulties, this account seems to bear some traces of Heraclitus’ principle of the union of opposites, and, in turn, inspires the Aristotelian doctrine that in change the quality that replaces another is contained within the object all along, albeit in privation. On the same theory, the incompatible quality that appears to be lost simply recedes into privation, abiding within the object.

Aristotle argues: ‘When there is a change into perceptible material, people say there is “coming-to-be”; but when there is a change into invisible material, they call it passing away. For they distinguish “what is” and “what is not” by their perceiving and not perceiving, just as what is knowable “is” and what is unknowable “is not” – perception on their view having the force of knowledge ... they deem the things to “be” *qua* perceived or perceptible – and in this they are in a sense on the track of the truth, though what they actually say is not true’ (*On Generation and Corruption*, i, 3). He shares the conception of change of the earlier philosophers of nature in that he too regards it as the replacement of a quality by an incompatible one: ‘Everything ... that comes to be by a natural process is either a contrary or a product of contraries ... everything that comes to be or passes away comes from or passes into, its contrary or an intermediate state’ (*Physics*, i, 5). Every property that changes does so into an incompatible one; to say the same thing in a contemporary terminology, it is replaced by another (determinate) property belonging to the same kind of determinable (Johnson, 1922). For

example, white cannot change into hardness, although it could rather yield its place to another colour. In the *Physics*, book I, chapter 6, Aristotle adds a third principle to the contraries; 'a third somewhat as the substratum of the contraries', and regards all three of the items mentioned as philosophical primitives (*Physics*, i, 4 and 7). Aristotle treats the contrary of a quality as 'privation' (*Physics*, i, 7). 'We speak of "privation" if something has not one of the attributes which a thing might naturally have, even if this thing itself would not naturally have it' (*Metaphysics*, v, 22). Thus comprised in privation is a contrary, and relative to the sort of substratum one has at hand, this can be possessed possibly, even if not actually. For example, a plant cannot *see*, and in the sense explained, for a plant seeing is not even a privation. Given one point of view, therefore, there is the substratum and the contraries (one of which is a privation), while from another the contraries are the aspects of the form, and thus an object is seen as embodying only the substratum and the form (*Physics*, i, 7).

According to Aristotle, in alteration an attribute is replaced by its contrary (and hence lost from sight), but the same subject of change or substratum continues to exist (*Physics*, i, 6). From this point of view the substratum of a fully articulated object is another, less articulated, substance from which this object comes. 'As the bronze is to the statue, the wood to the bed, or the matter and the formless before receiving form to anything which has form, so is the underlying nature to the substance, i.e., the "this" or existent' (*Physics*, i, 7). Hence by 'matter' Aristotle understands 'the primary substratum of each thing from which it comes to be without qualification and which persists in result' (*Physics*, i, 9). But 'matter is a relative term: to each form there corresponds a special matter' (*Physics*, ii, 2). Thus any object is a substratum or matter that has acquired a relative form. Aristotle uses the metaphor that matter desires the form as the female desires the male (*Physics*, i, 9).

We see that for Aristotle change does not involve coming into being out of nothing. First, the mutual replacement of incompatible properties occurs on something that continues to exist, and second, what becomes visible to our eye is not acquired out of the blue; it is already contained within the lasting entity, a condition which, in his later work, Aristotle explains in terms of his doctrine of potentiality:

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We ourselves are in agreement with [the early thinkers] in holding that nothing can be said without qualification to come from what is not. But nevertheless we maintain that a thing may 'come to be from what is not' – that is, in a qualified sense. For a thing comes to be from the privation, which in its own nature is not-being – this not surviving as a constituent of the result ... This then is one way of solving the difficulty. Another consists in pointing out that the same thing can be expressed in terms of potentiality and actuality.⁴

While in response to the Parmenidean challenge Aristotle pursues a path still quite faithful to the credibility of the senses, refusing to adopt the Eleatic distinction between 'seeming' and 'reality' (or truth), Plato does the contrary. For the latter philosopher, the perceptual world is full of change and hence full of contradictions, and moreover devoid of any permanence that would serve as object of knowledge. Visible change cannot be real in the full sense of the word. Reality belongs to a realm different from that of the appearances, and in this realm everything is eternal without any change. It does not contain the plurality and imperfection of the manifest world, and in it there is only one item for every different class of perceptible entities that share a common aspect. Plato does indeed follow the Parmenidean recipe: for him there is just no real change. What is real is the world of immutable and permanent forms constituting unique and perfect archetypes for the fleeting particular items of the visible realm, there being one form, graspable by reason, for the many imperfect instances of what we call a kind. This 'solution' to the problem of change yields, therefore, what is called the realism of universals. In Aristotle's characterization, a 'universal' is a single but multiply applicable entity (*Metaphysics*, vii, 13). It exists at once in a plurality, in the weaker sense that (in Plato's theory) the members of the (perceptible) plurality partake or share in it; the universal is their common aspect. A realism of universals must be distinguished from realism (*simpliciter*) concerning the manifest world. In the case of Plato, for example, the two types of realism are diametrically opposed.

The most famous argument for the existence of universals is known as the 'one over many', and although Plato is credited with it he nowhere enunciates it explicitly. Instead, there are weaker and

⁴ *Physics*, i, 8. Bracketed expressions are my own interpolations.

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applied versions of the argument recurring in a number of dialogues. Although the following form is applied to ethical attributes, it gives the ontological gist of the argument better than the 'semantic' variations occurring in other contexts.⁵

'Then this – I mean justice – is a certain thing?' 'Certainly.' 'Then, too, by wisdom the wise are wise and by the Good all good things are good?' 'Of course.' 'And these are real things, since otherwise they would not do what they do.' 'To be sure, they are real things.' 'Then are not all beautiful things beautiful by the Beautiful?' 'Yes, by the Beautiful.' 'Which is a real thing?' 'Yes, for what alternative is there?'

Below I formulate a more explicitly ontological version, often used in current philosophical debates. The argument begins by observing that the sensible world of particular entities is full of repetitions and recurrences. It looks as though the *same* colour, the same pattern, is here, there, and scattered all over the universe. This shirt, that pencil, the sea and the sky are all blue. Many particulars share the same thing; they all have blue as a common aspect. There seem to be identities, therefore, amongst non-identical particulars. This fact is neither something we create, nor a mere appearance. It reflects the truth, and hence the existence of universals must be acknowledged.

If plausible, this argument establishes that there exist universal entities shared by a multiplicity of particulars. As such, however, it does not demonstrate that universals reside in a world different from that of the concrete particulars of perception. Thus there is an open choice between placing them in an independent transcendent reality, or within manifest things. Plato took the former alternative, and Aristotle opted for the latter, each choice being made at a certain cost.

I have tried to trace some of the main lines of the ancient background of the philosophical debate concerning change, object and property. Some later historical material and contemporary contributions will be supplied as the main discussion develops. Thus parts of chapters 2, 5 and 6 will be concerned with properties and universals; parts of chapters 2, 3, 4 and 5 will treat objecthood. Change will be among the principal topics of chapters 4 and 7.

⁵ For example, in the *Republic* 59A, and *Parmenides* 147D-E. The following is from the *Hippias Major*, 287C-D and is presented here in Anders Wedberg's translation (1971, p. 30).

I.2 REALISM AND EMPIRICISM

There is both a tension and an affinity between the realism of the manifest world and empiricism. On the one hand, the latter doctrine is a natural way to approach the former, yet on the other, realism has a tendency to trespass beyond what empiricism can allow. But if realism is taken to entail that our true perceptual beliefs have objective and independent counterparts, then metaphysics cannot be without a realistic basis. A purely phenomenal description of the world is not an account of reality (see Gracia, 1988, pp. xv–xvi, 20–1). Hence a phenomenal ontology is at best delusive, since such depiction is not intended objectively. A metaphysical study must begin with either an assumption or a substantiation of realism, for a consistent rejection of the latter disallows the consideration of the object of representation over and above the representation itself. It deprives ontology of its proper content. Now potential conflict between realist and empiricist philosophical tendencies concerns the status of those elements which, although not directly available within the content of experience, are nevertheless necessary for the interpretation of it. Realism confers objectivity upon the items that provide the links in the perceived world, without themselves becoming part of the datum of experience. Yet if one embraces the belief that the only source of our knowledge of the world is experience, consistency seems to require rejecting such items as knowable objective entities. They may make an indispensable contribution to human survival, but success or utility do not create truth. Accordingly, even though they are crucial to our understanding of reality, principles such as substances, universals, kinds, causes, and laws of nature are to be denied objectivity. Other than observability, we do not possess a very reliable criterion for deciding where our mind starts unwarranted ontic multiplication.

Attempts to reconcile the two tendencies by plausible compromises mark the philosophies of such thinkers as Aristotle and Locke. Their doctrines give both objectivity and experience their due, and remain harmonious with common sense. Still, both of those philosophers have been sharply criticized for having gone too far in granting objectivity to what is essentially conceptual, that is, for having allotted reality in varying degrees to substances, essences and the like. I think many of these objections are quite justified, but I reject the conclusion usually drawn from such criticism, that the enterprise these philoso-

phers were engaged in is itself inconsistent or untenable. The present essay is another attempt in the same direction. It argues for an ontology, starting from the assumption that only what is observable can be known.⁶ But given such an empirical vantage point, what cannot be compromised is the *qualitative* and *particular* nature of reality.

The main task for me will be to construct and legitimize a notion of object, the sole ingredients of which are properties. I am aiming at an ontology of perceptible objects, and intend to set it up in terms of perceptible material. Thus, roughly, I shall regard objects as constellations of overlapping qualities at given locations. My standpoint can be seen as a continuation of the Anaxagorean tradition, adopted also, in varying ways, by some modern empiricists on the one hand, and by Leibniz on the other. I disagree, however, with the general attitude that marks this tradition, of ignoring the ubiquitous fact of ontology that properties never exist outside of objects. Aristotle, in contrast, recognizing the fact as essential, conceives of it as the ontic condition that the existence of properties is sustained within objects only, and calls it 'inherence'. Since independently existing properties are not the sorts of things we ever observe, neither can they be, believes Aristotle. His famous doctrine concerning inherence is that the manifest aspects of objects, that is, qualities, are held together in the object by matter, which is the support of the perceptible concrete thing.

To many it seemed that from the endorsement of this doctrine it follows that in an object there must exist something non-qualitative that performs the function of support. Presumably because of such an assumption, philosophers belonging to the other tradition have rejected the principle of inherence. I think it is the entailment that should be rejected, and not inherence itself. Although I believe that there must be, about an object, something that bears the properties, I do not believe that such a thing has to be non-qualitative. As I will argue in the following chapters, even the latter part of what I have just expressed is a view derivable from Aristotle's own philosophy. Such a view, however, conflicts sharply with the so-called 'Aristotelian' tradition in philosophy. This tradition has been the principal advocate of inherence against philosophers who tended to view objects as aggregates of properties, and assumed

⁶ This comment is not intended to apply to mathematical knowledge.

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almost without exception, that inherence entails the existence of a non-qualitative aspect in objects. My own conviction is that such an aspect should never be tolerated in ontology. As the empiricists have often complained, something non-qualitative is totally inaccessible to us and remains recalcitrantly mysterious. I denounce the idea of a mysterious entity, unknowable throughout and supposed to exist in objects. There, realism must be curbed in favour of empiricism.

I have just explained that my approach embodies fundamental agreements and disagreements with both of the traditions mentioned above. My opposition to the belief that the inherent existence of properties entails a non-qualitative aspect in objects makes it requisite that I focus on the notion of matter. It is not my purpose at all to deny the existence of matter. I will retain it in the ontology, but in doing so I will assign it a strictly benign status, rejecting the conceptions lending it any irreducible function in the explanation of objecthood. I will promote, therefore, the thesis that matter is admissible only in the sense of *material object*, where the latter is, in turn, accountable exhaustively in terms of properties. Matter does support the properties of an object, but as such it consists, itself, of properties.

Rejecting matter as an aspect of existence that explains objecthood would be a rejection of a crucial Aristotelian doctrine. Without going that far, I make matter itself reducible. My resolute observance of the principle of inherence implies that if, on my view, by *existing together* properties form objects, this is not that they – as it were optionally – *come together* to do so; it is because they must exist in such a way. What would rule out Aristotle's insight altogether is the acceptance of free-floating qualities; nor is this something logically impossible. I believe, however, that such a thing is excluded in every other sense of possibility. I repudiate, therefore, Hume's view that 'Every quality being a distinct thing from one another, may be conceiv'd to exist apart, and may exist apart, not only from every other quality, but from that unintelligible chimera of a substance' (1969, p. 271). On the contrary, I think the really nightmarish thing would be a world in which qualities disperse at large rather than leading a disciplined existence as they do when they are imprisoned in objects.

Upon substantiating the qualitative conception of objecthood I

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will extend this approach to other principal targets of ontological explanation, such as permanence and order in nature. With the purpose of forwarding my tenet that the basis of physical existence is in qualities, I will offer accounts of a number of issues that fall within these targets, purely in terms of the particular nature, resemblance and distribution of properties. I wish to establish, for example, that properties spread across the universe in complex patterns of resemblance, and that our beliefs about generalities in the world are abstracted from objective resemblances that hold among particular aspects of objects. The order of the world reflected in experience is, I maintain, due to the existence of complex properties. In the latter, we have the true 'cement' of the universe; they are the ontic gist of what, in our conceptual generalizations, we interpret as 'universals', 'essences' and 'causes'. Thus the present approach takes some central insights from Aristotle's and Leibniz' theories of the empirically observable object, and borrows from Locke's conception of a property. It combines the inherence of attributes with a purely qualitative explanation.

Much of the methodology and route of approach of this study is determined by its target: to set up an ontological theory of the manifest physical world. By specifying the type of existence to be accounted for, this target also draws boundaries for the theory that will be developed. The present approach does not claim full generality, and leaves at least three spheres outside its scope. These are the so-called irreducibly mental entities (such as Cartesian egos), abstract principles said to exist objectively (such as sets and numbers, etc.) and the unobservable⁷ theoretical entities of science (such as electrons and quarks). That the present ontology leaves these fields out of its scope does not entail, however, that it rules them out of existence. Though I am not particularly motivated to defend their existence, I do not see them at all as logical impossibilities. While I am convinced that an ontology does not have to be fully general, I also believe that it must be 'productive' so as to allow being developed consistently, in order to cover areas it does not explain directly. I do hope that the general systematic of the approach I adopt can be extended to realms I omit here because I have a

⁷ Concerning the distinction between observables and unobservables I follow van Fraassen, 1980, pp. 13–19, 56ff., and disagree that 'manipulability' can be a surrogate for experience. Contrast Hacking, 1983, p. 23.

restricted target. Such a task belongs to a different work, however. This choice will explain why in illustrating and testing the theses I discuss here I do not use examples from scientific theory, and appeal almost exclusively to familiar phenomenal objects, properties and change. The frequent employment of secondary qualities such as colour in my illustrations should not give the impression that I refuse to recognize the reasons (some of which have accumulated recently, as empirical findings) which cast doubt upon the assumption that familiar phenomenal properties have objective counterparts that resemble them exactly. Though I do not discuss their actual impact here, I do realize that they make the assumption debatable. But my reason for employing such examples is, as in many other studies in metaphysics, to provide illustrations that are easier to conceive. Hence I will avail myself of instances of this type, so long as they do not raise controversy because of their phenomenal status. I will avoid claiming, for example, the phenomenal primitiveness (unanalysability) of colours or their incompatibility in substantiating or criticizing ontological theses.

No plausible ontology can survive conflict with the *findings* of science. Thus like many areas of philosophy, metaphysics, too, must retain due harmony with science. I grant this, but distinguish it from the attitude of some scientifically minded philosophers who seem prone to devoting ontology entirely to the service of scientific *theory*. In the hands of such thinkers ontology becomes a study of the conditions of existence of the theoretical entities of microphysics, at the price of treating the manifest world and its entities as giving us a false picture of reality. These declare, for example, that our ordinary predicates expressing phenomenal concepts differ radically from the actual properties and relations of things, that the two 'correspond hardly at all', and that the real properties are only graspable by scientific theory (Mellor, 1991, pp. xviii, 181. Cf. Hacker, 1987, p. 55). I find this standpoint very 'Eleatic', and with due respect, I totally disagree with it.

If our discourse and concepts based on experience are altogether mistaken about reality itself, how can scientific theory that refers frequently to an unobservable realm hope to confer empirical substantiation on its claims purporting to be about the real? Would this not be sawing off the branch one is sitting on? I agree with Russell when he says that

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Historically physicists started from naive realism, that is to say, from the belief that external objects are exactly as they seem; on the basis of this assumption, they developed a theory which made matter something quite unlike what we perceive. Thus their conclusion contradicted their premiss, though no one except a few philosophers noticed this. We therefore have to decide whether, if physics is true, the hypothesis of naive realism can be so modified that there shall be a valid inference from percepts to physics. In a word: If physics is true, is it possible that it should be known? (1948, p. 213)

Clearly, an ontology of scientific theory stands or falls with that theory, and if we go with Russell once again, 'We find that the theories of the physicists constantly undergo modification, so that no prudent man of science would expect any physical theory to be quite unchanged a hundred years hence' (p. 213). Given our human predicament, what seem to last are empirical facts, and in them we have our ultimate basis for understanding reality. This is why I believe ontology must look upon developing explanations of various aspects of the manifest world as its primary task, and then extend its application from that vantage point. Like the early philosophers of nature and several others who have followed them throughout the millennia that separate us, in what follows I will assume that our empirical concepts correspond with the entities of the world, to the extent that such a presumption does not flout the findings (though not necessarily the theories) of science. I intend to discuss objects, properties and change as we have them in what we see, rather than in what lies behind it.

2

Ultimacy and objecthood

2.1 THE BASIC UNITS OF EXISTENCE

Whether the concrete entities of common sense are the ultimates of the physical world is a question closely related to the way objecthood is analysed. Some philosophers tend to view this intimate relationship as a mutual conceptual dependence, thus conflating the two issues. They seem to think that rejecting the primacy of physical substance is required when treating properties or events as basic, and that only a 'pure' substance view could regard objects as the fundamental units of physical reality. Without denying the closeness of the relationship, I object to the idea that there is a logical commitment here. I do not think, for instance, that a qualitative account of objecthood must treat exactly similar things as numerically identical, or that a belief in substance cannot survive without assuming a substratum or a so-called 'individuating essence'. The notion of a basic unit of physical existence must be distinguished from that of an ultimate of metaphysical analysis, a primitive which accounts for other principles but itself is not explained by anything else.

Let 'physically independent' signify the condition of anything that is capable of existing in physical space, by itself, without requiring the support of anything else.¹ Thus whether or not an entity is a part of something else, if it is independent in the sense explained (i.e., *capable* of supportless existence in space), then I will say that it is at least a potential *unit* of physical existence. Something is an actual unit of physical existence if it is detached, that is to say, *not* a part of a unit, in addition to being physically independent. Potential or actual, being a unit of physical existence does not imply being of the *smallest* units

¹ Cf. Aristotle's primary substance in the *Categories* and *Metaphysics*, xii, 5, and Descartes' substance in his *Principles of Philosophy*, i, 51, 1955, p. 239. For refinements of this idea see Rosenkrantz and Hoffman, 1991 and Lowe, 1994.

out of which other things are built; just like fundamental particles, astronomical bodies, too, possess physical independence. It should be possible for any such thing to be physically added (i.e., fused in space) to others to yield more complex and bulkier structures, and to be divisible into physically independent parts, unless, for some reason, a limit has been reached. Moreover being a physical unit is not an ontic status possessed in virtue of logical distinctness or simplicity. Certain entities, such as various aspects of objects, which by their qualitative differences are discernible analytically (and abstractable by the mind), are not physically independent. It so happens that physical units are analytically complex, concrete entities, and this is a fundamental metaphysical fact of our universe. Hence physical units are not at all the ultimates of the analysis of physical existence. Any physically independent entity, that is, any concrete thing of common sense, submits itself to analysis, in terms of entities not themselves independent. Even though an element of physical reality itself, what is analytically ultimate does not yield a body by being added to or by accumulating with others: it exists as an aspect of an independent body without detaching itself from it physically.

2.1.1 Objects versus properties

The familiar question, ‘What is the world surrounding us composed of, and what are the basic ingredients of concrete physical reality?’, needs to be seen in the light of the above distinctions. Such a question is concerned with the categories of existence, not with the specification of the smallest or temporally earliest kind of existence out of which everything else is built: if the latter were specified, our present question could be asked about it as well.

Around us we observe a multitude of objects of various sizes, located at different positions and forming different relations with one another, and each bearing a rich diversity of qualities. The pen I am holding, for instance, has a shape, weight, hardness, texture, colour, and so on, and as I write with it, its position with relation to my eyes and to the paper it touches is modified constantly. As it wears through time it acquires scratches and cracks, its nib flattens, and the pen undergoes even more radical formal changes at the final stage of its career. From one point of view, therefore, the world is constituted out of objects, which are themselves made of the fusion of parts that

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become individual objects upon being detached from the whole. These are bearers of properties and sufferers of change. From another point of view, however, any such object seems itself to consist of nothing but the qualities it is said to possess. This holds for every part of any object we care to focus on, and is true of even the smallest of things conceivable. In this sense, if we could count every property that extends over a region of space, there would be nothing else left, that is, there would be no objects in addition to be counted there. But, one may complain, such a consideration overlooks change. Through time, every object changes by changing its qualities or its position in space; there is no quality in the world that is immune from this. Identifying the change of properties as events, if one could count every event that takes place in a region of space through the lapse of a certain period of time, one would have left there nothing else to be counted. Thus the depiction of the way the world manifests itself in perception may be made, alternatively, in terms of three different descriptive primitives, each of which has been proposed, by different philosophical approaches, as the ultimate unit of existence. These are *objects*, *qualities*, and *events*.

The oldest of the three views regards qualities as more fundamental than objects, for among other things, it propounds that objects are nothing but bundles of qualities. Qualities in a bundle occupy the same position in space and time, that is, they are compresent. There are two versions of such a conception. One is ancient and treats qualities as basic because it does not categorially discriminate them from objects. It does not, therefore, reduce objecthood to a bundle of qualities: it recognizes the latter as physical units. Many pre-Socratics, with the exception of the Atomists, have seen qualities as things.² Thinking along these lines, it is natural to surmise that objects should break up into their qualities in the sense that they break up into their parts. But if this were so, it would be possible to isolate physically, or to strip off, the qualities from the bundles they constitute. It was noted above that in the world as we have it this cannot happen, and Anaxagoras' doctrine that in everything there is some of everything

² Robinson, 1968, p. 25. Anaxagoras' philosophy may be the earliest version of the bundle view. For doubts concerning this opinion see Sorabji, 1988, pp. 61–6. Plato can also be cited among the progenitors. See the *Theaetetus*, 157B 8 – C 2, 209C 7; *Timaeus*, 49E – 50A. For the first explicit statement of the bundle view see Epicurus' Letter quoted in Sorabji, 1988, p. 48. Chapter 4 of the latter work provides a rich discussion of the early bundle theories.

else (DK59 B11, B6, B8, B3) partly explains this impossibility from a standpoint that ignores the distinction. It was as clear to him as it is to most of us now that by dividing things into their parts one can never attain isolated qualities, and neither can one obtain things by physically assembling 'independent' qualities.

The modern and contemporary forms of the Qualitative Account do indeed distinguish objects from their qualities. Many advocates of such a view assert, however, that an object is a sum of qualities implying thereby that not objects but qualities are the primary ingredients of physical existence: although qualities might never be observed to exist independently of or as detached from objects, this does not mean that anything other than qualities is relevant to objects, or that it is physically impossible for the latter to be independent.³ In denying the physical ultimacy of objects, these modern versions of the Qualitative Account over-react to Aristotle's doctrine and to the ensuing tradition. They conflate the fundamental units of existence in the physical sense with ones fundamental in the analytical sense, and this conflation leads them to treat qualities as parts of the objects in which they inhere. A *prima facie* objection to such a treatment is to urge that while parts (not being qualities themselves) cannot be compresent with one another, neither are qualities parts, for, as a fact without exception, they never exist in isolation from objects. Such an argument needs elaboration, however. More detailed consideration has to be devoted to whether or not the Qualitative Account entails that the properties of an object are among its parts. Above all, we wish to understand whether the Qualitative Account is logically committed to the conflation I have mentioned above. Another issue concerns inherence: granting that it is, without exception, a fact of the world of our observation that properties inhere in objects, does this entail that properties must be borne by a non-qualitative principle integral to objecthood? In section 2.2 I will offer reasons for believing that neither entailment exists. If a qualitative account assumes, nevertheless, that these entailments hold, the mistake thus committed is not one that flows from the nature of this approach.

Apart from the Atomists, Aristotle was the first philosopher

³ My distinction between the 'ancient' and 'modern' versions does not correspond with van Cleve's (1985) contrast between the 'crude' and 'sophisticated' versions of the bundle theory. Many of what I have called 'modern' versions, and all of the 'ancient', are on his categorization 'crude'.

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explicitly to defend the view that objects, which he called 'primary substances', are the basic units of existence, and not qualities or events. According to him only primary substances have 'the character of a unit', and are never predicated of anything: they are not dependent for their existence on anything else. Indeed, if they did not exist, 'it would be impossible for anything else to exist' (*Categories*, 2 and 5). Except for objects, everything is a dependent existence. Through time, qualities and indeed all the object's attributes (except, of course, those constituting its nature) are replaceable, and upon every such replacement the object alters. Thus, a great diversity of events take place in the object. In contrast with the fleeting and temporary existence of the large majority of attributes and of events, the object is something that *persists* through change, and it remains identical for a much longer stretch of time, in spite of its renewing many of its qualities. Of course, changing too many of its qualities, or losing some crucial ones, will destroy the object too, but even then, observes Aristotle, something substantial – and perhaps *ultimately* non-qualitative – will remain behind. According to him, it is because objects contain the latter principle that they are more than mere bundles of qualities. Aristotle calls such a basis the *substratum*, or the underlying matter, which, before the generation of the actual object, was itself an object, as a block of marble is before the sculpturing of the statue (*Physics*, i, 7). Now his doctrine that objects or primary substances are basic asserts physical ultimacy, and must be discerned carefully from his view concerning analytic fundamentals: as is well known, Aristotle analyses objecthood into matter and form in union. More than anything, it is just this historical ancestor that is echoed in the distinction I have urged in the previous section.

Although he is at times unclear, and occasionally offers somewhat conflicting accounts, in Aristotle's own thought the substratum is not an entity that evades the senses. As it ordinarily manifests itself in the physical world, the substratum is not at all devoid of qualities. In fact, an object does not possess all its qualities *qua* being that object; many of its attributes are, above all, those of the substratum.⁴ This is natural,

⁴ *Metaphysics*, vii, 3, 8. Well aware of the substratum's potential to reduce to an unknowable subject, Hellenistic philosophy made a forceful attempt to reinterpret Aristotle's account in *Metaphysics*, vii, 3, as an indefinite extension bearing properties. Simplicius and Philoponus are the central figures in this argumentative search, and they have deeply influenced modern thinkers such as Descartes and Newton. For the history of this, see Sorabji, 1988. It seems impossible to conceive of indefinite extension. If made

since as a portion of matter constituting another object, the substratum itself has every feature of, and indeed potentially is, a body. Only the so-called *prime matter*, the 'deepest' substratum, containing no actual properties, will be totally inaccessible to the senses. Medieval Aristotelian thought viewed the object's 'form' not merely as the qualities an object acquires over and above those of the substance underlying it, but as including every formal aspect, that is, every attribute said to be borne by the object. Hence the substratum was construed rather like prime matter, rendering it highly mysterious from the empirical point of view. The result of this for the history of philosophy has been that because of reluctance to accept this most obscure principle that Aristotelianism was believed to presuppose, many philosophers have rejected the thesis that objects are physically fundamental. I indicated above, however, that treating objects or substances as fundamental units of physical existence should bring no commitment to an account in terms of a substratum, and even if one adopted it, this would not have to be a totally non-empirical principle.

With the exception of Locke, modern empiricist philosophers have rejected the legitimacy of the substratum. This created in them a leaning towards the Qualitative Account. As regards the phenomenal world, Leibniz too shares this leaning half-explicitly (1896, p. 226). In contemporary philosophy, among the proponents of the Qualitative Account, Bertrand Russell, G. F. Stout, Donald Williams and Keith Campbell are the most prominent.⁵ As contemporary representatives of the view lending primacy to objects, on the other hand, I cite three eminent living thinkers: Peter Strawson (1959), David Armstrong (1978, 1989) and Anthony Quinton (1973, 1979). A common characteristic of all these authors, on either side of the controversy, is their assenting to the theses that derive from confounding the fundamental units of physical existence with analytic ultimates. To state the point more explicitly, on one hand, they all ignore that lending primacy to objects does not entail the existence of mysterious substrata, while, on the other, they presume that a qualitative analysis of objecthood yields that the true physical units of the universe are

conceivable, however, it becomes definite, and then, as Alexander of Aphrodisias indicates, it implies a form.

⁵ Stout, 1923, 1930; Russell, 1948; D. Williams, 1966, 1986; Campbell, 1976, 1990. While Russell views properties as universals, the others treat them as particular instances. The latter conception of a property is designated, after Williams, as a 'trope'.

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qualities and not objects. Hence I call the versions of the Qualitative Account to which these misconceptions are appended, ‘crude’ qualitative accounts. I think precisely these assumptions suppress the feasibility of a plausible compromise between the qualitative and substance theories, and part of my purpose in the present work is to promote and somewhat ameliorate such a moderate position, which enjoys the advantages of both approaches.

2.1.2 Events as fundamentals

The doctrine that the basic ingredients of physical reality are events is a more recent development. In an explicit form it was advocated by A. N. Whitehead, and also by Bertrand Russell, with a somehow changeable content at different stages of the latter’s career. Russell’s earlier notion of an event is much closer to the more widely accepted idea of a changing property. It is with such a concept in mind that he claims that events are basic, constructing, as it were, material objects out of them (1956, pp. 329, 341). However, in the later approaches of Whitehead and of Russell, the notion of an event differs from the ordinary; while the former philosopher’s concept roughly corresponds to a spatiotemporal continuant object, the latter’s is a temporal slice (or part) of an object, a momentary compresence of properties.⁶

It is clear that merely renaming objects as ‘events’ or ‘processes’ would not be to analyse or to explain them away in terms of such notions. In this sense ‘events’ or ‘processes’ would simply denote objects themselves and not the elements out of which objects are composed, and with such a thesis I have no account to settle. If, however, an event is made to signify a compresence of properties at a given point in time, then the theory of the basicness of events, or the ‘event theory’, becomes indistinguishable from the version of the Qualitative Account analysing objecthood at a moment in time. Interpreted this way, the event theory merely renames the Qualitative Account. It follows that everything I say here about the latter approach is applicable to such an interpretation of the event theory as well. The suggestion, on the other hand, that through time objects are *temporally elongated* compresences of properties amounts, in gist, to a four-dimensional version of the Qualitative Account. Consider now

⁶ See Whitehead, 1929, pp. 114, 124. The beginnings of Russell’s transition to his later notion of an event can be seen in 1927, p. 286, and is complete by 1948, pp. 97–8.

the thesis that since through a period of time a large number of (the temporally elongated) qualities are replaced by new ones, and that given a sufficiently long span, gradually all qualities change and thus form causally related sequences, then four-dimensional compresences of properties are to be seen as processes. Some philosophers believe, therefore, that a description of the world from this vantage point analyses objects into processes. The response to such an approach will be analogous to the ones offered earlier: 'process' here simply renames temporally (four-dimensionally) extended compresences of properties. Granting the universality of change, the temporal existence of any property ends by being replaced by another, and if it is true that every event or change has a cause, any such replacement is a causal occurrence. Here again, the event (or process) theory stands or falls with the Qualitative Account from which it was derived in the first place. I devote the next section to the four-dimensional conception of the world, and to the consideration whether this conception entails the truth of the qualitative (and hence the relevantly interpreted event) account. There, the main issue to be focused on will be whether a four-dimensional conception makes the bundling of (temporally extended) qualities a matter of arbitrary choice. Before opening such a discussion, however, I wish to examine what I regard as the only substantial claim of basicness made on behalf of the category of events. I will concentrate on Russell's earlier conception and its sequel in more recent philosophy: this is the idea that an event is either a building block of what we call an object, or a category of existence equally fundamental to that of an object, not to be explained as change in the latter.

A principal obstacle to the thesis that events are the elements out of which objects are constituted would be the existence of certain universal properties of objecthood which are lacking in, and cannot be explained by, events. Such a claim has indeed been made and, in confronting it, the event theory must either deny the genuineness or the universality of the alleged features, or else try to show that a compresence of events can account for their existence. It must be clear, moreover, that since events are the changes of properties, the very same issue is a point of controversy between the substance and qualitative accounts as well. Which are the features purported to belong to objects irreducibly? Philosophers arguing for the primacy of substances have observed that besides the character of *independence*,

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objects contrast with events and properties in being *impenetrable*. If objects were built out of events, given that the latter are penetrable, objects, too, should be so. Since objects bear the general feature of impenetrability also not found in events, they must be irreducible to, and inexplicable in terms of, these latter. Let us attend more closely to this principle, namely, to the claim that no two objects can occupy the same location at the same time.⁷ An object may indeed occupy the hollow places, the cavities, of another object. The glassful of water that I swallow, and the knife I stab through the apple, occupy the empty spaces vacated by my stomach and by the apple, and the latter pair enclose the former. Clearly, however, these are not cases of spatiotemporal overlap, and do not violate the principle of impenetrability. In contrast, several events may overlap with the same objects at the spatiotemporal positions they occupy. Events happen in objects since they are changes in the properties of objects. Donald Davidson's example of a ball simultaneously rotating and warming up (1980, p. 178) illustrates such overlap quite vividly.

Against the argument from impenetrability, Russell points out that since this is not an empirical belief, it must be something logically necessary; this, in turn, is an indication that the notion of matter is itself a logical construction. In other words, if it is true that any material object whatsoever is impenetrable, then this implies that such objects are logical constructions (1956, p. 329). Russell may be supposing that, given appearances, since the impenetrability of matter is never refuted empirically, such a thing is an indication that it is *irrefutable*, and hence it must be a necessity. More importantly, however, he seems to countenance the following type of reasoning: our belief in the complete universality of the impenetrability of objects cannot be sustained by empirical observation. Experience cannot provide evidence for such unvaryingly general truths. The thesis of impenetrability must therefore be a necessary truth, and hence *a priori*. But such a fact would be inexplicable if material objecthood were something independent of the mind. Our knowledge of an objective necessity that is independent of experience would be without justification. The notions of material object and impenetrability must be, therefore, logical constructions.

⁷ Aristotle, *On Generation and Corruption*, i, 5. His influential argument is in *Physics*, iv, 6 (213b5). A very interesting discussion of the later history of this objection is in Sorabji, 1988, chapters 5 and 6, especially p. 73. See also Quinton, 1979.

I think Russell is right in believing that there cannot be empirical knowledge of a necessity. But his argument against the objectivity of impenetrability remains quite inconclusive, because at least two of the assumptions he makes as part of such reasoning are questionable. First, there is reason for doubting that the impenetrability of material objects is a *logical* necessity. At least as applied to perfectly indiscernible objects, such as two qualitatively identical sticks of chalk, there does not seem to be a contradiction involved in the idea of their merging into one another, even though such a thing never happens in a universe the physical nature of which is like ours. I am ready to grant that the impenetrability of objects is a physical necessity; but Russell's argument needs more than that. Secondly, as several *a posteriori* essentialists will confirm, many *de re* necessities seem to be discoverable empirically. What seems clear is that there is no inconsistency in the idea of the empirical discovery of necessities. It may not be possible to *know* empirically that a proposition is necessary, but one may still have empirical indication or somewhat incomplete evidence that it is so. Clearly, necessity that cannot be known empirically will not be less than necessity.

Perhaps impenetrability is explainable by appeal to the way in which a multiplicity of interpenetrating events or properties form a compresence. Now it is indeed true that events are not exclusive occupants of space and time, but this does not mean that they are never so. Events being the change of properties, and given that some properties are mutually exclusive, certain events should exclude certain others. Determinate properties under the same determinable are mutually exclusive (Johnson, 1921, chapter 2). The very same surface cannot be both soft and brittle. It follows that the same part of the same object cannot simultaneously undergo the events of becoming soft and becoming brittle. An example of an object and an event which cannot overlap is a body of liquid, which cannot crack (or shatter). These cases indicate that even if objects and events are not on a par in their manner of occupying space and time, objects still could be compresences of large numbers of events (see Russell, 1956, p. 341). For if such a compresence embodies a relevant diversity of changing properties under a significant multiplicity of determinables, then any other compresence of events, some of the elements of which fall under coinciding determinables, will be mutually exclusive with the first. For example, a compresence of events which includes that of

becoming soft will exclude from its position another compresence containing the event of hardening. May this not, at least in broad lines, explain impenetrability? Instead of positing a general property such as solidity, singly responsible for impenetrability, the case will have then been grasped in terms of the mutual exclusiveness of the generation of certain properties.⁸

Objects are not compresences of events; not because their impenetrability remains inexplicable in terms of interpenetrable events – we have seen that, after all, such an explanation is available. The true reason is that the notion of the compresence of a multiplicity of short-lived changes cannot yield a persisting substance, however compatible it may be with the notion of a ‘momentary’ object. If objects were compresences of changes only, there would be no enduring objects; it would even be impossible to assert truly that a given material thing suffers such and such changes.⁹ The world as we have it is not so Heraclitean, and objects persist for relatively long spans of time – at least considerably longer than the brief durations of events.

Would it be a fair defence of Russell’s position if one maintained that although a momentary compresence of events does not add up to an ordinary, temporally persisting concrete thing, a gapless spatiotemporal succession of events does? On a Russell-type approach, momentary compresences are said to be the temporal parts of the whole continuant object, which they form by adjoining along the temporal dimension. It is quite easy to understand the idea of momentary compresences of *properties* which, by temporal juxtaposition, form continuous entities. When, in chapter 4, I consider change and identity through time I will discuss this type of view. Temporally adjacent compresences of *events* is a different matter, however, and I believe that what the latter notion yields is something like a flickering and contiguous succession of momentary entities which do *not* form a continuant. Such a contiguity would not yield a persisting thing, even if the events contained in every

⁸ This is not my own account of the impenetrability of objects. It is an illustration of how such a fact *can* be explained in terms of events or properties that are not always impenetrable. Its limitation is that it cannot account for the impenetrability of exactly similar objects.

⁹ Because (1) there would be nothing persisting that could be said to undergo such changes, and (2) even before our statement is over its object would have changed, thereby rendering it false. Cf. *Theaetetus*, 182C–D.

temporal slice of it were causally related to those of the next, and thus one could regard this type of a succession as a process. A 'Heraclitean' process that entails total change from each of its temporal stages to the next does not even resemble an object: causally related or not, a temporal juxtaposition of events, understood as changing properties, simply rules out continuity. In contrast, a temporal juxtaposition of *property* compresences allows the continuation of at least some (and maybe all) of the properties of one such temporal slice in the next. After all, two exactly similar properties adjoining in time without any interruption (or imperceptible replacement) are the parts of the same continuing property. The temporal juxtaposition of changing properties (i.e., events) prohibits such a thing. Continuity is lost not by separateness or spatiotemporal discontinuity only; difference, too, is discontinuity, and contiguous difference does not yield continuity. Where the sea ends and land begins is a discontinuity; similarly red light following blue light immediately, in an otherwise unilluminated medium, does not amount to a continuity of colours even if the pairs are linked causally. If Russell's momentary objects are made of changing properties, any two such temporally adjoining entities will have entirely different properties and thus, although contiguous, they will not be continuous. Persisting objects cannot be made purely out of momentary events, for not every property of an object changes at all times. Some do, but many others persist for a while; for a thing to endure through time, a much greater part of its qualities must remain permanent. Thus the theory that momentary events are fundamental units fails, even if the latter are understood as analytic ultimates.

2.1.3 The four-dimensional picture

Now I wish to throw a brief look at the concept of an object from within a four-dimensional view of time. It is not my purpose, however, to discuss theories of time, and in the present study I will try to avoid explicit commitment to any such specific theory. I will not, therefore, evaluate the tenseless approach or the block-universe ontology some philosophers have inferred from it (see, for example, Williams, 1968). Construed as a mere alternative *representation* of the universe, the four-dimensional scheme will not entail commitment

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to a four-dimensional ontology. Moreover, like a new map drawn on a different principle, such a depiction may be in certain cases quite revealing. Let us note that conceiving time four-dimensionally does not entail temporal parts for objects.¹⁰ Nor does assuming things that continue through time create commitment to the spatialization of time; what invites the latter is rather the manner in which persistence is conceived. I will return to this issue at the beginning of chapter 4.

'Spatializing' time freezes events by representing them as the extremities of temporally extended properties (Smart, 1956, 1968). Briefly, I wish to consider whether this vision of reality destroys the primacy of objecthood. Using Minkowski diagrams (1964) one can represent space and time within a unified four-dimensional framework: instead of a three-dimensional space, the ingredients of which undergo change through time, this picture incorporates a fourth dimension containing all temporal modifications. Accordingly, time does not flow, nor is there becoming; time spreads out, and things extend in it at their dates just as they extend in spatial positions. A highly influential theory of objecthood stated from within such a conception of the universe propounds that objects have temporal parts in four dimensions as they have spatial parts in three. A temporal part understood within the framework of this doctrine is, therefore, the continuous thing over a (shorter) period of time. From this vantage-point, the three-dimensional objects of our perception are incomplete; they are mere temporal slices, that is, parts of perduring four-dimensional objects. A 'complete' object is elongated in the temporal dimension, and is usually much taller in this direction than in any of the other three. Hence, in this sense of completeness, an apple is not spherical; it is more like a worm. A red spot on its surface is also a temporal slice which in its entirety is a thin red ribbon extending in the temporal dimension: its extremities are what we, in our commonsense perceptual world-picture, grasp as the *events* of its coming-about and disappearance. The same applies to the extremities of the worm-like apple: at one end is its gradual growth from a flower on a branch, while at the other is its abrupt destruction in a mouth. In the four-dimensional 'objectivity' there

¹⁰ Mellor, 1981, pp. 88 ff., 103, 110 ff. is an example of a four-dimensional approach making no room for temporal parts in objects. For the (opposite) thesis that a temporal parts theory is incompatible with a 'tensed' theory, see Oaklander, 1992.

are no motions or changes in our accustomed sense; events and properties are one and the same sort of thing (property-occurrences). Just as an insect crawling on a surface meets the border of two colours, or a passenger on a train rushing through a tunnel reaches light suddenly, the four-dimensional trip of our awareness creates the impression of a change in something perfectly still in itself (see Eddington, 1920, p. 51; Weyl, 1949, p. 116, and Grünbaum, 1968, p. 352).

The four-dimensional description of the world has led some eminent philosophers to believe that it provides grounds for regarding objects as arbitrarily divisible bundles of property-occurrences extending four-dimensionally:

An immense number of occurrences coexist in any little region of space-time ... we may say that a piece of matter is all that happens in a certain track in space-time, and that we construct the tracks called bits of matter in such a way that they do not intersect. (Russell, 1956, p. 329)

Our tables, steam yachts, and potatoes are events of comparatively small spatial and large temporal dimensions ... An object ... is an event with a relatively long temporal dimension.

(Goodman, 1951, pp. 128–9. See also Williams, 1968)

Hence, according to this conception, objects are nothing but occupants of space-time regions, enjoying no special status over and above being coinciding property-occurrences. It must be pointed out that once we begin looking at reality this way, whatever temporally elongated bundle of properties we select, and wherever in space-time, such a bunch will contain several causally related contiguous properties along with many others that are continuous all through: any such bundle will embody what the three-dimensional conception of the world grasps as causally related successions of events intertwined with a larger proportion of lasting properties. Regarding temporally extended bundles as *processes*, the philosophers we have referred to above maintain that through space-time objects turn out to be processes, advancing thereby the version of the event theory which, as I have declared earlier, renames temporally elongated bundles of properties as events or processes:

Physical objects, conceived thus four-dimensionally in space-time are not to be distinguished from events or, in the concrete sense of the term, processes.

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Each comprises simply the content, however heterogeneous, of some portion of space-time, however disconnected and gerrymandered.¹¹

Many of these philosophers go on supposing that there is no independent unity, distinctness, and identity of objects, and that one can draw their borderlines completely liberally. They even maintain that detached and distant bundles may be seen as parts of the same whole, and that continuous ones may be conceptually dissected according to varied principles. It follows for them that continuity in space-time does not determine unity.¹² But then treating sub-compresences of properties, or even singular qualities, as independent entities seems rather a short step from this. For if scattered bodies and arbitrary parts are allowed to form independent objects, then why not arbitrary individual properties?

This type of an event theory, which is alleged to reduce objects to processes that also embody continuities, is certainly not subject to my earlier criticism that persisting objects cannot be obtained out of compresences of short-lived events. But then, the term 'process', here, simply designates temporally extending compresences, and we have nothing new over and above the substance versus bundle dispute transposed to the four-dimensional context. The approach under consideration would be lent a decisive support if, looked at four-dimensionally, the world revealed temporally extended properties that exist singly and independently of bundles. But there appears to exist no such fact to be discovered. To be sure, the purported arbitrary dissectability of the world may, if one wishes so, be understood as the thesis that whatever the state of things may be, conceptually we are capable of parsing out the world as we desire. Such a thesis has no ontic import, however, and does not concern me here. The claim, on the other hand, that the distribution of properties in-the-world-itself is a loose one, in that, rather than manifesting strict agglomerations, it enables us by its fissile nature to stack up property-occurrences in any way that suits our purposes, is, I submit, a plain falsehood. Thus to return to the question whether

¹¹ Quine, 1960, p. 171. Strawson, a major defendant of the substance theory, speaks as if, ontically, objects could be *seen* as four-dimensional 'process-things' made out of the succession of three-dimensional 'events' (1959, p. 56). Quine notes that Strawson's only criticism of such a scheme is from a linguistic point of view.

¹² E.g., D. Williams, 1986, p. 3. Such a position falls within what van Cleve, 1986, p. 142, calls 'mereological conjunctivism'.

the excessive ontic relativism described above is an inevitable consequence of abandoning the three-dimensional perceptual view of the world, we can declare that there is no such consequence. In space-time temporally extended properties inhere invariably in temporally extended compresences, just as ordinary spatially extended properties exist in three-dimensional bundles. Compresences draw their own borderlines, and a dissection which diverges from the actual condition of objectively coalescing properties will be unfounded and against fact. The four-dimensional picture does not eliminate the apparent physically basic status of objects, and the dispute between the Substance View and the crude version of the Qualitative Account reproduces itself anew within this representation as well, opening up a new battleground for them. Adoption of a four-dimensional view of the world is in itself no basis for assuming the crude Qualitative Account.

Moreover, this kind of approach seems strongly committed to the crude version of the Qualitative Account: a view propounding that objects *are* (or are indistinguishable from) events or processes is very likely to commit the fallacy of confounding physical and analytical ultimates. Unless, and rather unusually, 'are' is taken in the restricted sense of 'are analysable (explainable) in terms of', the above claim entails treating property-occurrences as physical units. This is a consequence which, in Russell's thought of the early twenties, reveals itself quite explicitly: 'the bricks out of which the world is built ... are events ... The world consists of a number of entities which have various relations to each other and perhaps also various qualities. Each of these entities may be called an event ...' (1956, p. 329).

It may indeed be that counting every property-occurrence in a space-time region will exhaust the entities to be counted there. We cannot infer from such a truth, however, that objects have been shown to be nothing but property-occurrences. The mere existence of events in a region does not entail the existence of an object there. The reason is that if, generally, events enjoyed the status of physical units and thus *could* exist singly and in isolation from each other, those in the region referred to would not form objects unless they formed there compresences. But if they could exist independently, why should they, in actuality, exist in compresences everywhere? If such a possibility were granted, the fact that the world is inhabited by objects rather than scatterings and conglomerates of properties would need quite a bit of

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explaining. It has to be noted, furthermore, that the compresences of our physical reality are more than property-occurrences that just happen to overlap in space-time. In our world property-occurrences exist in compresences without exception, that is, as I would like to say, by physical necessity. A bundle of events (or of properties) that accounts for objecthood possesses its elements necessarily, as existences that (physically) *depend* on being in such a state of concretion. The theory under criticism has remained blind to the fact that in physical space-time property-occurrences must be in compresences. Objects are not reducible to a mere multiplicity of property-occurrences, since along the lines of the Qualitative Account they are explainable at best as compresences of property-occurrences. The notion of a property-occurrence does not logically entail being in a compresence, but that of an object entails such compresences. It may be concluded that, physically, the 'bricks' are the compresences of property-occurrences and not the property-occurrences themselves.

2.1.4 Dependent existence

To summarize my reasons for rejecting the event ontology, I have urged, first, that generally such an approach does not offer an independent view beyond renaming the Qualitative Account, and that like most of the prominent versions of the latter theory, it too confounds the different senses of ultimacy. My second criticism has been that when the event theory is not a simple restatement of the Qualitative Account, it fails to explain the persisting objects of the world we perceive, submitting in its place a succession of momentary objects. I have maintained, therefore, that events cannot be viewed even as analytic ultimates. Some philosophers have added another reason for rejecting the event theory, in its version that does not reduce to the Qualitative Account. They point out that it is not logically necessary that an object should alter its properties; after all it is perfectly conceivable that in some 'cooler' spatiotemporal region of the universe, objects should exist changelessly, without becoming involved in any event.¹³ Logically, temporal extension does not necessitate that the properties instantiating such an extension should

¹³ Slote, 1975, pp. 32 ff., considers the possibility of changeless objects existing eternally. Compare Quinton's notion of a 'momentary object' which does not involve events because it is not extended temporally: 1979, p. 203.

change. If some of an object's non-relational properties can remain permanent through a stretch of time, then all of them can stay still for a while. That some things undergo change does not entail that others could not last through a stretch of space and time changelessly.¹⁴ An ontology treating events as basic to objects is to be rejected. Either it fails to offer a plausible analysis of objecthood or it boils down to the Qualitative Account.

This objection would be undermined if, in fact, some events or properties existed independently. Such circumstances would also demolish the distinction between analytic and physical ultimates. Let us add that we are capable of conceiving of properties or events separately from objects, and just this makes Plato's Theory of Forms logically possible. But once again, one cannot get away from the fact that in the concrete reality of observables, properties and their changes never exist in isolation and always inhere in objects. Scientific theory, on the other hand, ascribing properties and changes to fields of energy or forces, indeed allows for their occurrence without objects. This is not allowing them independent existence, however. Although they adhere to the thesis of the primacy of objects, both Strawson and Quinton are inclined to grant that some events exist independently. Strawson mentions the cases of a flash and a bang, and Quinton repeats these examples, supplementing them with that of a smell.¹⁵ I think these simply illustrate the logical possibility mentioned above. As regards our actual reality, however, we should be careful not to confuse the experiences of a flash, a sound, or a smell, with what they are objectively, according to the standard explanation of such phenomena.

Might some not object to my Aristotelian predilection, in that it distorts the true nature of ontic dependence, since objects, too, exist dependently on properties, in a sense analogous to our saying that properties exist dependently upon objects? Ontic dependence should be recognized to be completely mutual. Even though there exist no properties which are not *of* objects, this does not make them dependent upon the latter unilaterally, since objects, too, do not exist without properties. In the empirical world there are no 'bare particulars' devoid of properties.

¹⁴ According to Shoemaker, 1984, chapter 3, temporal extension in a completely frozen universe is a logical possibility.

¹⁵ P. F. Strawson, 1959, p. 46; Quinton, 1979, pp. 212–13. See also Mellor, 1981, pp. 119–20, for other examples of events alleged to occur without objects.

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I respond, first, that reading Aristotle's doctrine as a claim appealing to the possibility of propertyless objects is mistaken. As I will argue in 2.2, the principle of inherence does not entail mysterious substrata. Moreover, Aristotle himself disallows independent bare particulars. No doubt, there must be properties for there to be objects, and in just this sense ontic dependence is reciprocal. Aristotle's doctrine is to be grasped, rather, as the proposition that only an object whose existence is made possible by the property instances embodied in it as its aspects can independently of other existences (though surely not independently of its own aspects), hold a position in physical space, as a unit that can move, grow, alter or be destroyed (*Metaphysics*, xii, 5, 1070b–1071a). By bearing the particular properties which characterize it, an object exists independently of every other property instance or object. However, by inhering in an object, a property does not acquire independence; it can move only dependently upon that object. There is a lot more to an object than this particular property, and all that lot along with this property are united in a bundle, constituting the formal aspect of the object. There is nothing more to an object that is not embedded in it, and upon which its existence depends.¹⁶

Suppose I wanted to move this particular instance of white along the top of the table. For this I would have to slide the whole sheet of paper in which this property inheres. If my desire was to move the sheet, however, I could do such a thing without having to move any entity other than the sheet. If it is retorted that just as the sheet had to be moved in order to move the colour instance, moving the sheet, too, requires moving its colour, the answer will be that, first, while the former was done *in order to* obtain the result desired, in the latter the result is *gratuitous*. Moving the sheet entails, freely as it were, having moved the colour along with it, in contrast with the fact that in order to move the colour I must move other entities as well. Second, by moving the object I move its colour, not because the former depends upon the latter for its existence, but because the colour is one of its integral aspects. The thesis that dependence is analogously mutual implies thinking of the sheet *besides* its attributes, and hence fails to be consistent.

Another feature indicating the dependent existence of properties

¹⁶ Rosenkrantz and Hoffman, 1991, try to give precision to the notion of a substance's independent existence, showing how such independence fails to be true of other entities such as properties. See also Lowe, 1994, pp. 534–5, and Chisholm, 1994.

concerns the fact that an object survives the change of its attributes, while, as a particular aspect, a property cannot change objects in a comparable way: qualities do not migrate from one material body to another. But what do we make of the following: a blue pot in porcelain smashed into pieces is destroyed, but exactly the same instance of blue survives, in a divided state, in the fragments of china scattered on the floor. The same instance of hardness characterizing a certain bronze statue survives when the bronze is successively moulded into the shapes of a pan, a sphere, and a stool. These examples do not illustrate properties that migrate to other objects. In the latter case, the quality seeming to migrate from one object to its successor persists, in fact, in the same spatiotemporally continuous portion of matter which underlies these objects. It belongs, in the first place, to the portion of matter which constitutes and survives these objects successively. Similarly, in the former case, the property instances that appear to migrate from the pot to the fragments are above all the properties of the spatial parts of the constitutive porcelain. In these examples, the properties that later on seem to part from objects inhere in them in virtue of inhering in their constituent pieces of matter: the pot is blue because the piece of porcelain constituting it is this colour; the statue is hard because the bronze composing it is hard.¹⁷ An articulated thing obtained by the implementation of a functional structure on a body, necessitates for its existence this parcel of matter as its substratum, in a somewhat analogous way in which properties need, for their existence, an object to inhere in. With this in mind we may suggest that Aristotle's principles of inherence (for attributes) and embodiment in matter (for forms) reveal a common feature basic to physical ontology, namely, that any property or functional structure needs an object (with its own attributes) in support of its own existence. I name this 'The Benign Doctrine of the Substratum', and distinguish it carefully from the theory of 'bare particulars' or mysterious substratum. Clearly, adherence to the Benign Doctrine does not entail any commitment to mysterious substrata. A parcel of matter constitutes an object without being itself a bare particular that holds the qualities of that object together.

¹⁷ The extension of a given property on any part of an object is a part of the whole of that property (of the whole object). For example, just as the handle is a part of the pot, the blue of the handle is a part of the blue of the whole pot. See Goodman, 1966, p. 130.

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One should beware of a misinterpretation of the Benign Doctrine. Embodiment in matter, which I subsume under this doctrine, is not to be grasped as the thesis that some *objects* are dependent upon others for their existence. To put it in the Aristotelian terminology, primary substances never depend on other things for their own existence. Thus an object said to be embodied in a parcel of matter, which constitutes it, is not a dependent existence thereby: *as an object* a bicycle does not inhere in the body of metal constituting it. The particular functional structure of the bicycle (the design or plan of it), *as a form*, does indeed inhere in the body of metal, which, as a piece of matter in union with this form, constitutes the bicycle. The body of metal is a potential individual itself, and remains in the bicycle as a benign substratum and defers to it its ontic status of individuality, along with the properties it has *qua* being the sort of parcel of matter it is. In chapter 5 I will discuss this issue in greater detail.

Two theses brought under the title of the Benign Doctrine are, therefore, that to exist any property must be the attribute of an object, and that any articulated object must be constituted of a portion of matter in the sense that its form must inhere in that portion (see *Metaphysics*, vii, 13, 1038b5). These two are the applications of the same basic idea at different levels: in the former, we consider the relation between any single property and an object, while the latter concerns how several properties that constitute a ‘form’ inhere in a certain body. The difference between them is significant in conceiving of alteration and substantial change distinctly, but otherwise both capture the dependent existence of properties, singly or in bundles. An aspect of the Benign Doctrine that I shall exploit in this work is its compatibility with the Qualitative Account. If, among other things, an object is a compresence of properties, then the Benign Doctrine amounts to the principle that a quality, or an incomplete compresence of qualities, can only exist compresently within a complete bundle.

In the subsequent section I will show that viewing the properties of an object on a par with its parts is not a logical implication of the Qualitative Account. I will argue, moreover, that acknowledging that properties inhere in substances does not commit one to the assumption of mysterious substrata. In conjunction, these points are expected to show that a qualitative account does not have to be a ‘crude’ version.

2.2 BUNDLES AND PARTS

Whether one adopts a qualitative or a substance account, one must grant that an object is at least a bundle, a compresence of properties, unless, of course, one is prepared to make a commitment to bare particulars.¹⁸ For an object to have a property is for that object to bear it throughout (part of) its extension, where that property permeates with other properties (of the object) which extend across the same spatial position. Given this necessary condition, there arises a need for a general understanding of what compresences involve and of the problems they raise.

Is a bundle not the aggregate of what goes into the making of it? Is a compresence not a *sum* of qualities each of which is a part of the whole bundle? If we grant that it is, it seems to follow that explaining objecthood in terms of a bundle of qualities entails that every intrinsic property of an object and, *a fortiori*, every part of every such different quality of the object, is also a part of the object. Such an approach treats properties as physical units, and furthermore converges with the pre-Socratic conception of qualities. The supposition that the Qualitative Account entails that properties are the parts of the objects in which they exist dependently has been a prime target for philosophers believing in the necessity of mysterious substrata. They point out that the parts of an object, such as the legs of a chair, are potentially independent things, and can be separated from the object. Moreover, such parts can never interpenetrate. Since qualities are unlike parts on both counts, the bundle theory must be rejected for its absurd logical consequences: for these critics it follows that since properties must inhere in substances, in objects there exist non-qualitative substrata that bear these properties (see Martin, 1980, pp. 6–8, Armstrong, 1989, pp. 62, 114–16, and Campbell, 1990, p. 69).

The consequences just cited, namely, the interpenetrability of parts and the independence of qualities, are indeed absurd in that they constitute physical impossibilities. Some important qualifications are necessary, however. First, it is by no means the case that these implications are repugnant to all. As I have mentioned before, the

¹⁸ A 'blob theory', Armstrong, 1989, p. 38, will have to choose between attributing to objects *aspects* which constitute the basis for properties, or simply state that they are barren of any such attributes. On the former, it is possible to regard objects as compresences of aspects.

tropes view postulates that entities such as qualities could exist in isolation (Williams, 1986, pp. 3–4, Campbell, 1990, pp. 21, 58–9). Most often tropes occur in compresences, but they do not have to. I disagree with the tropes view, and will try to refute it in chapter 6. Nonetheless the fact remains that, as it stands, the objection under consideration cannot hope to have a decisive effect upon such a view, since what it assumes to be an absurdity is embraced by the tropes theory as a natural aspect of properties.

Second, as I will try to show below, it is not true that the bundle theory entails that qualities are among the parts of objects; on the contrary, different elements of a bundle *cannot* be parts of this bundle. Thirdly, as such, the fact that properties always inhere in objects is not a positive argument for the existence of bare particulars as bearers of qualities. To inhere in a substance is not necessarily to be borne by a non-qualitative substratum.

Suppose, as we did earlier, that in speaking of objects as bundles of qualities what is meant are quality-instances. The bundle view does not entail that qualities are the parts of the objects in which they inhere. The belief that it does derives from a confusion over the notion of a part.¹⁹ Think of the parts of a given whole; these may overlap or be discrete. Those that are discrete are spatially adjacent²⁰ and hence do not occupy the same position at the same time. In unity and spatial continuity, such parts make up the object which embodies them. The elements of a bundle of qualities constitute a contrast with such parts. In a bundle only some qualities are juxtaposed or spatially separated, as is the case with the yellow of the stylus of a fountain pen and the white dot at the tip of its other end. Many exist in an interpenetrated state, sharing the same position at the same time. The same extension of an object such as a finger is at once pink, soft and warm. In part, therefore, this is what distinguishes the notion of a compresence from that of a heap or a sum of properties. Thus, property stretches are related to the bundles they form together with others differently from the way in which they are related to their own parts, or to the larger wholes of which they are parts; only the latter is analogous to the object-part relation. The blue of the pot's handle is part of the rest of the blue of the pot, while it coextends with the

¹⁹ Note the parallelism between this confusion and the conflation of analytic units with physical units.

²⁰ For simplicity, I leave out those mereological sums the parts of which are spatially apart.

brittleness and hardness of the same handle without being their parts. Moreover, those non-overlapping properties of a compresence located side by side, or with other properties inserted in between, as in the different colours at the opposite ends of the pen, will not thereby be the *parts* of the bundle. Though there is no necessity that a quality in a compresence should spatially overlap with every other property of that bundle, it is necessary that it should do so with some of them.

As it stands, the contrast just drawn will not satisfactorily distinguish the spatial parts of a bundle (or of an object) from the qualities it contains, for it does not take into account the non-discrete spatial parts. If parts overlap as well as properties, the above distinction will never get off the ground. And clearly, many of the parts of a whole do overlap. For example, one's body minus one's right arm, and one's body minus one's left arm do overlap to the extent of one's body without the arms, and yet both are the parts of one's entire body. Still, there exists a good reason for maintaining that parts and properties do not overlap in the same way. Different properties overlap without sharing any of their own parts. Parts that overlap, however, necessarily have in common some of their own parts, namely the parts that constitute the extent of their overlap. For parts to overlap is for them to share some of their own parts, and to be discrete is for them not to share any of their parts. In a bundle none of the different properties that overlap share their parts. In fact, they cannot. Different determinables such as the pink, warmth and softness of my finger extend in the same position in space but have nothing that is of the same kind that they could share. It follows that what is a quality in a bundle is not and cannot be a part of that compresence. Furthermore, the togetherness of parts in an object cannot be a compresence of such parts. The relation of compresence holds among entities of different kinds (different determinables); the relation between the parts of a whole is among entities of the same kind (same object, same property ...). Thus parts cannot exist in an interpenetrated fashion without sharing some of their parts, whereas the elements of a bundle do so without ever sharing any of their own parts.²¹

Those who uphold the existence of mysterious substrata may

²¹ All this applies to objects analogously. As Aristotle says, the sense in which attributes are present in an object is not that in which parts are said to be present in a whole: *Categories*, 1a22.

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attempt to argue in the following alternative way: if an object were a mere bundle, qualities compresent in it would exist without a support or a substratum. But if something can exist in a compresence without a bearer, or independently, it ought to be possible for it to exist independently in isolation from a bundle, or from any other property. Since properties never do so, they should be dependent existences that necessitate a non-qualitative support. What holds for properties outside bundles holds equally well within them. Then it should be impossible for properties to exist in mere bundles; there would be no objects if there were no bare particulars supporting the compresent properties.

This argument is not cogent. First, it assumes that in a compresence qualities exist independently. Clearly, however, from the thesis that independently existing objects are mere compresences one cannot infer that the elements of such compresences are independent, too. As I will explain below, it seems perfectly plausible to suppose that in a compresence qualities are mutually dependent, i.e., that each depends upon the compresence of the others. Second, the argument assumes that since it is impossible to begin with isolated properties and to bring them together in a bundle, compresences of properties cannot exist independently. But such an assumption is self-defeating, for it is equally impossible to bring together isolated properties and a bare particular, and thus obtain an independent object out of them. Properties are not parts. It is consistent with this that a compresence of them could exist independently, since the parts of a compresence are themselves compresences.

The bundle theory does not entail, therefore, that qualities are the parts of compresences in which they exist; in fact, they cannot be. Neither does the dependent mode of existence of qualities necessitate bare particulars as substrata. That qualities must inhere in something does not entail that such a thing be a non-qualitative substratum. I believe we have every reason to acknowledge Aristotle's principle that anything that is not a primary substance exists dependently, as a kind or an attribute (aspect) of a concrete thing (primary substance) (*Categories*, 2b5, 2b15). It is a different matter, however, to decide how attributes exist in objects, dependently. The statement that qualities inhere in substances does not *mean* that they are borne by non-qualitative substrata. Affirming the principle of inherence is one thing; specifying how inherence obtains is another. For the latter an

additional theory is needed, and the bare particular thesis is just one such proposal. If inherence is a relation between a property and something else, the natures of such a relation and of its second relatum call for specification, and one does not have to construe these two in terms of ownership and a mysterious substratum. To express the matter in a different terminology, holding that the Benign Doctrine of the substratum is true because there exist mysterious substrata is to propound quite an extreme thesis; the latter is not entailed by the former, and another basis ought to be available for it.

My view is that to inhere in a substance is to be the element of a compresence of qualitative properties. In the *Categories*, Aristotle takes the object itself (the primary substance) as that to which the attributes belong.²² Accordingly, a property inheres in an object simply in the sense of 'being present in' that object. If we can interpret this as existing within the object's extension, on the assumption that an object is a compresence of qualities, inherence will amount to being an element of a compresence of qualities. We see here that inherence can be understood consistently as existing within a bundle of properties. The bundle view and inherence are not incompatible. This removes a major obstacle alleged to stand in the way of the bundle theory.

As I have declared earlier, I look upon the general fact that properties exist dependently upon objects as a manifestation of a physical necessity. In my interpretation this fact derives from a fundamental condition underlying the nature of existence in our universe. Now *if* an object *is* a bundle of properties, and does not involve as part of its nature non-qualitative entities such as mysterious substrata, then properties said to inhere in an object depend upon the bundle. Hence on such a conception each property will be said to depend for its existence upon every other property that contributes to the bundle; by physical necessity, properties exist in compresences which (if sufficiently varied) are physically independent existences. A compresence the elements of which cling together as a necessary condition of their own existence is a concrete entity that may be regarded as a physical unit. This is how, on the view I adopt (and which itself depends on the truth of the assumption that objects are compresences of properties), analytic units complement one another

²² In the *Categories* there is no mention of the substratum (hupokeimenon). Even in the *Physics*, the substratum is not viewed as an intrinsically qualityless bearer of attributes.

and form physical units. These results offer hints of how a plausible version of the bundle theory can be set up, avoiding the confusion of what is analytically basic with that which is a physical ultimate, i.e., shunning a crude qualitative account. An important respect in which qualitative accounts differ from one another concerns the ways in which they see and explain the tie between the elements of the bundle. I reserve the details of such a discussion for chapter 6.

In the light of the distinction between physical and analytic ultimates I have concluded with Aristotle that objects are the fundamental units of observable physical existence. They are independent existences that bear properties and suffer change. Such a conclusion does not bring a commitment to any notion of a mysterious substratum or 'bare particular'. A qualitative analysis of objecthood is consistent with the view that physical units are substances, as I have said, on the condition that there exists a satisfactory account of how the bundle of properties is held together. Hence a better understanding of inherence is requisite. On the other hand, whether qualities suffice as the analytic units of objecthood has to be resolved through a discussion of individuation. Our considerations thus far have not provided definitive criteria for concluding one way or the other, and I have been assuming the bundle theory rather as a working hypothesis. Besides somewhat secondary reasons, such as the unknowable character of the substratum, we still have no compelling reasons for rejecting either approach. A more substantial judgment has to be postponed until the end of the following chapter.

In giving my reasons for adopting the object ontology, I have reviewed the alternative views and reductive attempts which, in one way or another, boil down to one of the two rivals, the substance and the bundle accounts of objecthood. As will be observed more clearly in the next chapter, the classical shortcoming of the bundle view is that it cannot be a sufficient account of objecthood. The main source of embarrassment for the Substance View, on the other hand, is its commitment – though inessential – to the substratum as a bearer of properties. In chapter 3 I will discuss the substratum in its additional capacity of an individuator for objects. My purpose is to combine the valuable insights of the two accounts in a single theory, thus eliminating their problematic aspects. Having opted for an object ontology, I adopt a substance view, but I reject every rôle of the substratum that falls outside the minimal function I have labelled as

'the Benign Doctrine'. Incorporating the bundle theory, I treat substances as compresences of properties in which particular properties inhere. The present approach is, therefore, denominable as a particularism of bundle-substances.

The purpose of the next chapter is to offer a view of individuation which harmonizes with and complements the conception of objecthood I have sketched above. For this, the rôle and significance of two principles, formulated both, in modern times, by Leibniz, need to be discussed in some detail. These principles are the Identity of Indiscernibles and the Indiscernibility of Identicals. Roughly, I will argue that, as interpreted in the sense of a compresence of universal properties, the former principle is insufficient for individuation. Once one construes it more properly, however, as a compresence of *particular* properties at a particular position, it emerges as an adequate individuator. Such a construal will be the basis of the way in which I will account for bundle-substances. Leibniz' Law, or the Indiscernibility of Identicals, on the other hand, will be considered as a logical truth. I will argue that any principle of individuation must make provision for observing this law, since failure to do so ends up by prescribing objects with contradictory qualities. It is by means of such an argument that I will try to refute the substratum, or parallel notions, as principles of individuation.

3

Individuation and objecthood

3.1 DISTINCTNESS AND OBJECTHOOD

If the world is made of particular substances, there must be some basis upon which they are entities distinct from one another. To exist as a particular, something must be distinct from any other thing, and indeed from the rest of the world. Individuation is a precondition of nature as we have it. A Parmenidean world would be concrete, but because of its perfect homogeneity and continuity it would involve no actual distinction at all. Existence in it would have no plurality: no objecthood, no change, no qualitative multiplicity and no motion would occur there. Aristotle says that 'a man investigating *principles* cannot argue with one who denies their existence. For if Being is just one ... there is a principle no longer, since a principle must be the principle of some thing or things' (*Physics*, i, 2).

Consider now Parmenides' being, the One, 'from the outside'. Would this constitute reason for objecting to an understanding of individuation as distinctness? Does the logical possibility of a universe with a single individual demonstrate that in its absolute solitude such an individual would be one without distinctness? (see Gracia, 1988, pp. 34–5, 167–8) I think not. First, circumstances in which the distinctness of something does not arise are not those in which the individual fails to be distinct: the former does not amount to the latter. Second, if any other individual existed in such a world, the two would be distinct. Third, any particular physical entity has extension, and therefore parts as potential objects, which become independent as soon as they are detached. Thus the distinctness of a unique individual is at least its distinctness as a whole, from the objects that result from its division into parts. Finally, it seems perfectly consistent to think of something as being distinct from what it is not, that is to say, from the empty space that surrounds it.

I conclude that objections to the widely accepted notion of individuality as distinctness are not insurmountable.

3.1.1 The bundle theory and the Identity of Indiscernibles

Much of modern philosophy has answered the question of how in the physical world something concrete is distinct from any other concrete existence in the light of the fact that in experience objects differ from one another through possession of different properties. Some objects differ only to a degree, retaining many similarities, while others have fewer qualitative resemblances. Difference is not only in the number of similar qualities that objects possess, but also in the degree such particular qualities resemble. Concerning the other extreme, it is a notable empirical fact that even those objects that strike one as very similar are different in several respects. No two substances in the actual world are exactly similar. A principle of individuation conceived in this fashion has been proposed by Leibniz: according to this philosopher, what individuates an object is its qualities, including, no doubt, as a further property, the way in which these qualities combine. 'It is not true that two substances may be exactly alike and differ only numerically, *solo numero*.'¹ In other words, things that have all their properties in common are identical: since indiscernibility is declared to be a sufficient condition of identity, this statement is called the 'Identity of Indiscernibles'. Such a proposal must be distinguished from indiscernibility as a necessary condition of numerical identity. The latter, occasionally called the 'Indiscernibility of Identicals', or 'Leibniz' Law' for short, simply asserts that if two things possess properties that are not common, then they cannot be identical.

The Identity of Indiscernibles is controversial. But before considering the philosophical debate over it, its logical connection with the Qualitative Account must be clarified. If indiscernibles are identical, it seems to follow that an object is purely a totality of compresent properties in a certain arrangement, and apparently *vice versa*: if the compresence of the actual intrinsic properties of a given object *a* are

¹ 1973, p. 14. The principle has its forerunners in medieval philosophy. Gracia, 1988, chapter 5, especially fn. 23, cites Boethius and Thierry of Chartres. Leibniz was inspired by what Aquinas, 1983, p. 53, had proposed as a criterion of individuation for souls and angels. Of course, in addition to indiscernible qualities, an indiscernible configuration must be presumed for these, since widely different compresences can be obtained by reshuffling the very same qualities.

both necessary and sufficient for that object, then anything that has exactly those qualities will be identical with *a* (Adams, 1979, p. 11). Hence, the philosophical tradition denying that objects are mere bundles of qualities also rejects the Identity of Indiscernibles; in fact, it aims at destroying the Qualitative Account by attacking the principle. What reasons could there be for doubting that the Identity of Indiscernibles implies the bundle theory? If the sameness of properties is sufficient for numerical identity, then it seems that objects involve nothing but properties in a compresence. For how could Leibniz' principle be true if the bundle theory were false? The bundle theory would be false if an object were not merely a compresence of properties in that, in addition, it embodied a non-qualitative bearer of properties, a mysterious substratum. But if objecthood involves an aspect such as the latter then it is possible for two bodies that bear the same properties to be distinct in virtue of possessing different substrata: a consequence that entails the falsehood of the Identity of Indiscernibles, thus confirming that the latter principle implies the bundle theory.

Suppose one tried to generate a counterexample to the implication by introducing properties of the kind 'being identical with the object *a*', and assuming further that while these items are relevant to the indiscernibility of objects, nevertheless, they are not contained in the bundles that make up the same concrete entities. Do these circumstances falsify the bundle theory, without, on the other hand, requiring the rejection of the Identity of Indiscernibles? A 'counterexample' such as this strikes one as being rigged, in that it rests entirely upon the arbitrary assumption that bundles exclude, but indiscernibility includes, the properties introduced above. But if one affirms, with the bundle theory, that objects are compresences of properties, it does not seem consistent to go on and judge that things are discernible on the basis of intrinsic properties other than those contained in the compresences. How can an object have an intrinsic property that is not contained in itself, i.e., that is not a matter of just how that object is?² Consistency requires letting bundles and indiscernibility cover exactly the same categories of properties. Once that is secured, however, the truth of Leibniz' principle will be sufficient for that of the bundle theory.

² Intrinsic properties are attributes 'things have in virtue of the way they themselves are': Lewis, 1986a, p. 61.

What of the reverse implication? At first sight it seems that the bundle view implies Leibniz' principle. Since this theory maintains that there is nothing to an object but its properties, i.e., that an object is made purely out of the properties it is said to possess, nothing more and nothing less, it seems to follow that if two objects, or bundles, have every property in them the same, then they themselves are one and the same. Granting the consistency discussed above, could the Identity of Indiscernibles be false, yet the bundle theory true?

There is a case in which the Identity of Indiscernibles may be falsified, without the bundle theory also becoming false: if properties are construed as universals, then one and the same bundle will have indefinitely many instantiations, and each new one will falsify Leibniz' principle (Gracia, 1988, pp. 64–5). Of course, it is possible to regard a bundle as composed of *particular* properties (note that this is how we have conceived of bundles in much of the critical discussion of chapter 2), and require that indiscernibility, too, be conceived in such a particularistic way. Some contemporary philosophers have proclaimed that on this interpretation the Identity of Indiscernibles is vindicated (Campbell, 1990, p. 20). I agree that there is a sense in which this consequence follows, and in the present work I shall defend such a position. I maintain that if properties are particulars, then the bundle theory implies Leibniz' principle *provided* that properties also include historical and modal ones.

3.1.2 The Identity of Indiscernibles versus the substratum

Now I return to the dispute between the defenders of the Identity of Indiscernibles as a principle of individuation and the rival tradition of the substratum theory. The chief objection to the Identity of Indiscernibles is that it is not a logical truth. As has been pointed out often, it is possible for two things to be exactly similar, and yet be numerically non-identical. Although we do not encounter this sort of thing empirically, there is no inconsistency in imagining twin sisters, or artifacts, exactly similar down to the minutest detail. Indeed, supporting his principle, Leibniz invariably refers to empirical facts. To see that any two things distinct from but strikingly resembling each other are not exactly similar, all one need do is examine them in greater detail. Observe the leaves of a tree which at first glance look so similar: closer inspection will reveal that no two of them are perfectly

alike. Even two drops of milk appear different under the microscope. No empirically available fact seems to refute the principle (1934, p. 204). Surely, though, what decides the acceptability of the Identity of Indiscernibles, or of the Qualitative Account which stands and falls together with it, ought not to be mere empirical and contingent facts. Conceptual analysis could not be allowed to hinge on anything less than a logical truth. All Leibniz offers, however, in *a priori* support for this claim, turns out to be his 'notorious' Principle of Sufficient Reason (1934, p. 213). I will come back to the rejection of Leibniz' principle as a logical truth.

The historical rival of Leibniz' principle of individuation gives the medieval notion of the substratum its main function. Against the Qualitative Account the Substance View proclaims that what individuates a substance is its substratum: two things differ not primarily because of the differences in the qualities they possess, but above all because they possess distinct substrata. Hence a thing is more than a bundle of compresent properties. In Aristotle, what I have called the Benign Doctrine is conjoined with the doctrine that matter or substratum is a principle of particularity and of individuation. I have pointed out already how the later Aristotelians have interpreted the matter or substratum as devoid of every formality: playing down his views concerning the *relativity* of matter (*Physics*, ii, 2; *Metaphysics*, viii, 4), which emphasize the Benign Doctrine, they imposed a narrow construal of his principle that any substance is the union of form and matter, with the result that they identified the substratum with prime matter, attributing every property or actuality to the form. This notion implies that the form is the sum of all properties said to inhere in the substance. In isolation from matter, the form cannot have a concrete existence, and many objects, such as the replicas of a thing, can share the same form. Theoretically, these replicas could be exact similarities of the original. If it is union with matter that makes the form into a substance, not only can a mere bundle of properties not individuate an object, but the latter cannot even exist in the concrete world. It is useful to remark here that with the exception of a handful of recent discussions we mentioned earlier, both sides of the controversy have agreed that the elements of bundles are universal qualities having several instances at once.

There is reason, therefore, for thinking that the doctrine often presented as Aristotelianism is not quite this philosopher's own.

Aristotle would say that the substratum of a given statue is a particular piece of marble, and that piece, as the matter of the statue, individuates and distinguishes the latter from its replicas (*Metaphysics*, vii, 8). An 'immediate' substratum has itself every characteristic of an object, which, through acquiring a new form, has actualized as a new substance. The piece of marble was an independent object before it became a statue. It too possessed matter and a form. In Aristotle, the concept of prime matter occurs only rarely, and, though an implication of his theory, it is highly unusual for him to appeal to it in individuating an ordinary object. But then, it may be objected that for the very same reason Aristotle leaves the question of individuation without a definite criterion. For, if what individuates an object is what used to be another object, then the question is begged regarding what individuates the latter, and so on, until one reaches something fundamental, an entity that is not itself an object. The regress contained in the gradation from the more complex to the simpler qualification of matter ends in the theoretical entity, *prime matter*. It can be asked, for example, how two replicas of a statue, made of qualitatively identical pieces of marble, are individuated. It seems not unnatural, therefore, from within the Aristotelian framework, to suppose that prime matter³ is the ultimate individuator, and that every qualification of the object belongs to its 'complete' form. Without attributing the doctrine of the mysterious substratum to Aristotle himself we may acknowledge it as the compelling reason behind some of the Scholastics' tenets that the principle of individuation is an ultimate substratum, a kind of totally unqualified, indeterminate prime matter, seen nevertheless as a particular.⁴

In Locke, these concepts and the accompanying terminology are somewhat altered. By 'substance' he ordinarily means the substratum, understood as that by which the human mind supposes the qualities of the thing are held together. This, he says, is 'nothing but the supposed, but unknown, support of those qualities we find existing, which we imagine cannot subsist *sine re substantie*, without something to support them, we call that support *substantia*; which according to the true import of the word, is, in plain *English*,

³ Which exists always within the substance as its ultimate substratum, and never independently, even in the past: *On Generation and Corruption*, i, 5.

⁴ See Aquinas, 1983, p. 34, and the translator's comment in footnote 1.

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standing under or upholding'.⁵ Locke's account of substance reflects the conception of the substratum as a particular devoid of any attribute apart from that of being a bearer of properties. The non-spatial interpretation of Aquinas' individuator, the '*materia signata*', may have been the historical ancestor of this notion, which acquired some popularity in the seventeenth century. In contemporary philosophy it is at times labelled the view of the 'bare particular' or the 'pincushion account'.⁶

My discussion so far should reflect the duality of function that the adherents of the Substance View bestow upon the notion of the substratum. In their view the latter does not only distinguish an object from any other, but also bears its properties; at the same time it individuates an object and holds it together. But how compelling is such a notion of a substratum? Recalling a point made in 3.1.1, it may be plausibly suggested that the reason why the Identity of Indiscernibles is not a logical truth is because it is made to apply to properties grasped as universals, and that there are good reasons for supposing that the Qualitative Account construed as a bundle of universal properties cannot be sufficient in explaining objecthood. This does not entail, however, that only matter, understood as a vacuous bearer, could confer the sufficiency needed, and thereby guarantee the distinctness of an object. First, as I have argued in the last chapter, it may be a fundamental ontic condition that qualities do not subsist alone and that they can only exist in comprehences: that a bundle of universal qualities cannot yield a concrete substance does not necessitate the existence of an entity in every particular object, which, however unreachable, still holds them together. Second, the individuality of the object may be a logical consequence of the particularity of its qualities existing in comprehension. If so, the mysterious substratum is not a requisite at all. But if ontology can do without the latter, the prospect of rejecting it as an unfounded metaphysical invention becomes very attractive indeed. A notion that is totally obscure and theoretically

⁵ 1961, vol. 1, p. 245. See Martin, 1980, for contexts in which Locke uses 'substance' to denote the concrete object.

⁶ Aquinas, 1983, pp. 36–7. For 'bare particulars' or 'the Lockean account of particulars' see Armstrong, 1978a, pp. 102 ff. and pp. 113 ff. For the 'pincushion account' see Aune, 1985, pp. 46 ff. For the 'mysteriousness' of the substratum see Gracia, 1988, pp. 88, 124, 127, 161. The main proponent of 'bare particulars' in our time has been Gustav Bergmann: see Bergmann, 1967.

useless deserves elimination.⁷ A healthy and plausible account of objecthood should disentangle the Benign Doctrine from the substratum as a principle of individuation, and retain only the former. My belief is that something closer to the truth can be obtained by ameliorating the Identity of Indiscernibles. Several attempts have been made in this direction, but since most of them interpret properties as universals, they have had limited success. Thus I conclude that the desired effect cannot be achieved without somewhat modifying the spirit of Leibniz' approach to individuation.

3.2 INDIVIDUATION

A principle of individuation distinguishes a thing from the rest of the world, singling it out in space and time from any other concrete entity existing there. It may be expected that such a principle must also secure an object's identity at a point in time; that it should individuate just one and the same entity at that time. In a sense therefore, turned inside out, a principle of individuation should be a criterion of identity. On such an approach a principle distinguishes a thing from the rest of the world only if it distinguishes it as the same thing as itself: if it is the possession of P that individuates Socrates, then it cannot be the case that Callias is P and not identical with Socrates at that time. For if, contrary to what has just been said, the consequent of the implication should be false, then the antecedent too would be a false proposition.

I am not so sure that these demands can be fulfilled entirely. As will be discussed in the next chapter, two non-identical things can cohabit for a length of time and have throughout everything in common except for some of their historical and modal properties. This point should be distinguished from the relation holding between a thing and its parts. Any proper part of a given object occupies part of the same place as the whole at the same time. Trivially, the parts are not identical with the object; there is no spatiotemporal point of the (proper) part in question that is not also a part of the object, but many other positions occupied by the object are not also occupied by that part. Every such position is occupied by the other parts of that object. When we take the sum of all the parts of the object, however, we

⁷ See Berkeley, 1969, pp. 120 ff., and Hume, 1969, p. 63. In contrast, Martin, 1980, is a contemporary defence of the substratum as a bearer of properties.

have something that overlaps with the object fully, both in position and in qualities. As I will present more explicitly in due course, there are pretty powerful arguments that seem to establish that the two are nonetheless non-identical. The portion of marble (or the sum of marble-parts) a certain statue is made of is not a statue itself; it existed before the statue was carved on it, and, for exactly the same reason, the statue is not merely a block of marble. Moreover, one can imagine possible circumstances under which the same statue, through the replacement of its parts, is no longer made of that piece of marble.⁸ Even though they are not the same thing, for some stretch of time the block of marble and the statue exist in the same position. To generalize this, as required by the Benign Doctrine, any substance cohabits with its constitutive matter.

Such a thing is not a violation of impenetrability. What would count as a violation is, for example, the case of two objects of the same kind sharing the same position. As Locke maintained, 'For we never finding, nor conceiving it possible, that two things of the same kind should exist in the same place at the same time, we rightly conclude, that, whatever exists anywhere at any time, excludes all of the same kind, and is there itself alone.'⁹ Thus no two statues, or no two blocks of marble, can occupy the same place at the same time, but an articulated object and its constitutive material must cohabit. Whether there are reasons for rejecting the objective existence of such cohabitation is a question I will tackle in chapter 4. Let me briefly note here that in my view an object and its constitutive matter are not identical, but they also fail to be distinct individuals; being distinct individuals implies being non-identical, without the converse holding true. My treatment has the consequence of disabling a principle of individuation in its capacity to capture identity in the restricted case of cohabitation.

A principle of individuation can be construed ontically, that is, as individuating its object 'in itself', and hence independently of human understanding. It can be also seen epistemically, as a criterion by means of which human understanding distinguishes a thing from

⁸ Wiggins, 1980, pp. 28, 34–5; Noonan, 1980, pp. 22–4. The idea can be traced back to Aristotle. Locke, 1961, p. 276, discusses the same thing in application to a living organism and the mass of matter constituting it.

⁹ 1961, p. 274. See also Wiggins, 1968, p. 93. Cf. Leibniz, 1896, p. 238. Simons, 1985, pp. 71 and 75, argues that Locke's principle may not apply to aggregates such as heaps, but concedes that this does not affect Locke's view that distinct bodies of the same kind cannot coincide. See also Noonan, 1986b, Harris, 1986, and Simons, 1986.

other entities, as a particular. An analogous distinction exists between 'identity' and 'identification' (Wiggins, 1980, pp. 5 and 53; Gracia, 1988, pp. 19–20). Something may possess identity even though we cannot, at that time, identify it. An epistemist approach will allow individuation only as a mental capacity, ruling out the metaphysical issue. A realistic approach, on the other hand, will recognize both of these interpretations as meaningful, but will insist that something can be individuated in the epistemic sense only if it individuates ontically as well.

3.2.1 Leibnizian principles and their insufficiency

Familiar principles of individuation fall into two basic types: one specifies one or more aspects that may vary in status and nature. Notions such as matter, substratum or position¹⁰ have been propounded as *specialized* principles individuating a thing. Without committing Aristotle's own view to anything other than matter, I call principles of this type 'Aristotelian'. A 'Leibnizian' principle, on the other hand, includes at least *all* the qualities of the object. Leibniz' own principle is just one example of this type. Others add to this different aspects of the object which they view as necessary for individuation. Hence, a principle is Leibnizian if it is formulated in terms of the qualitative and perhaps also relational properties of the thing, and includes at least all of its present qualities. Along these lines, purely qualitative indiscernibility has been elaborated upon chiefly in two ways: one version augments it with the relational properties of the objects concerned, and the other with a property of 'being identical with itself' (see Adams, 1979, p. 11). The latter property is not a quality of the substance. It is held to be a relation that any object has to itself. Advocates of the last version suppose that such a property belongs to every concrete individual, and at least some identify it with the Scotist 'haecceity'. Once it is assumed that every object possesses the property of being identical with itself, then Socrates, too, bears the property of being identical with

¹⁰ Russell, 1948, p. 310, attributes the theory that an object is individuated by its spatiotemporal position to Aquinas, referring to Aquinas, 1983, pp. 36–7. But as Aquinas' translator suggests in footnote 11, there is reason for thinking that 'designated' here simply means being the entity indicated, rather than entailing position. As Gracia notes, 1988, p. 265, fn. 23, the first philosopher who propounded the theory is Boethius. See his 1968, p. 6.

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Socrates. Now if two things, Socrates and Callias, are indiscernible, then they share every property of Socrates including that of 'being identical with Socrates'. (For that matter, Socrates too will share Callias' property of 'being identical with Callias'.) It will follow that Socrates and Callias are identical. Many objectors, however, have found the alleged property of 'being identical with the particular thing something is', and especially its use as an individuator, illegitimate (Ayer, 1954, p. 29; Armstrong, 1978b, pp. 10–11; Gracia, 1988, pp. 126–8, 146–7). I postpone the critical discussion of this to the end of the next section.

Now for the Leibnizian principle appealing to relational properties: if two things *a* and *b* are *R*-related to one another, then this situation can be represented as *a*'s possessing the property *Rb*, expressing the spatial and temporal relations of *a* given object to others as the properties of this object. These have also been called 'positional properties'.¹¹ If Leibniz' principle is enriched so as to include positional properties as well, then, it is claimed, it necessarily individuates, for no two things can be in the same place at the same time. Shortly, it will be seen that although there is a sense in which position individuates things this is not anything that can subserve a Leibnizian principle of individuation, when the latter is interpreted 'universalistically', that is, by conceiving of the properties objects are said to bear as multiply applicable entities.

Although the position occupied by a substance can be specified in terms of the positional properties it thereby has, the two are not the same thing, and this difference must be brought to light. Max Black (1952, pp. 153–64) has shown that two objects occupying different positions may share exactly the same qualities and the same positional properties. It follows that if position is to be part of a principle of individuation, it will have to be so separately from, and irreducibly to, any version of the Identity of Indiscernibles (cf. Quinton, 1973, pp. 17, 24 and 25). Black's argument is designed to demonstrate that no Leibnizian principle can be sufficient for individuation. He describes a possible world in which the sole existents are two spheres separated by a distance and exactly similar in all their qualities; each possesses every feature that the other has, not in a directly opposite way but in a radially symmetrical fashion: they share all their relational

¹¹ Quinton, 1973, p. 17. Armstrong, 1978b, p. 90, declares that 'first-order relations, relations between first-order particulars, are all reducible to spatio-temporal relations'.

properties as well.¹² It won't do to describe the spheres by appeal to relations such as being left or north of, for this would entail introducing a foreign element, a vantage point from which an observer is describing the universe, and such a thing would spoil the hypothetical symmetry. In this world, therefore, the twin spheres are two distinct indiscernibles, where the latter encompasses the qualitative as well as positional properties of the objects. This shows that a Leibnizian principle of individuation incorporating positional properties cannot be tight enough; utterly blind to the logical possibility indicated by Black, in individuating a thing it identifies with it anything else sharing with this thing all of its qualitative and positional properties.

Is the counterexample itself undermined by the fact that the very description of it, except for the proposition that there are two spheres, would be equally true of a world, for example, with a tightly curved non-Euclidean and relativistically conceived space?¹³ I do not think this follows. The existence of a consistently describable counterexample involving two distinct but indiscernible objects is sufficient for refuting a Leibnizian principle. That there is an 'equivalent' description that assumes a non-Euclidean space is no hindrance here. Even in such a space there could be two distinct indiscernibles. Regardless of the nature of space, if there can be two distinct indiscernibles we have a counterexample.

It may be useful to recall that in devising such counterexamples one is not describing something whose existence is independent of the description itself. One is not taking photographs or observing something out there, but constructing a possible world by depicting it. There is therefore no obligation to think first of indiscernibility and then to observe whether or not indiscernibles can be distinct in this or that conception of space. Like Black, one can begin by positing two distinct objects, regardless of the nature of the space they are in, and then try to give a consistent description of them as indiscernibles. Since one can do this one has a genuine counterexample to Leibnizian principles.

Black's world involves two distinct spheres *separated by a distance*.

¹² Adams, 1979, p. 14, discusses the same type of example recreated in the temporal dimension, within perfectly cyclical universes.

¹³ Hacking, 1975, pp. 219–56. For a rejection of Hacking's attempt see Adams, 1979, pp. 14–16, and Legenhausen, 1989.

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Let us see if his description, except for the claim of distinctness, is also satisfied by a single sphere in a universe with a tightly curved space. In such a non-Euclidean world the object would be at a distance d from an object which is itself. From the same point of view, any object in Euclidean space is at an infinite distance from itself. There is, however, another sense in which any individual object is at no distance from itself: it is exactly where it is. The object of the non-Euclidean universe would be no exception to this. Owing to the curvature of space, in one sense it would be at a finite distance from a sphere, and in another sense it would be at no distance from one. What distinguishes Black's two spheres from this case is that, whatever the nature of the space they may be in, while they are at a certain distance d from one another in one sense, there is no sense in which they are at *no* distance from one another. Saying that if they were one and the same, they would be at no distance from one another is simply changing the description. I conclude that the two worlds are not given by equivalent under-determined descriptions. One may add that the single sphere in the tightly curved space would not *only* be at a distance d from an object which is itself: unlike the spheres in Black's universe, this sphere would also be at a distance $2d$ from a sphere which is itself. But then it would also be at $3d$, $4d$, and so on from itself. One reaction to Black's devastating criticism has been to revert to the so-called property of being identical with the particular property that something is (see Brody, 1980, p. 9, and Adams, 1979), and another to abandon Leibnizian principles altogether in favour of some principle of the Aristotelian type. It will be seen that both attempts fail in a similar way. Neither Aristotelian nor Leibnizian principles are defensible on their own.

In what follows I will show that an Aristotelian principle of individuation cannot be adequate by itself and that only the *ensemble* of the position and the qualities of an object individuate it, each being necessary by itself but sufficient only in conjunction. That position alone cannot individuate is in a sense trivially true, for such a thing is after all an empty place. If anything is an individual, it is an object at a place, and this necessarily involves all the qualities of that thing at that point in time. An individual is a concretion of qualities at a spatiotemporal position in accordance with certain fundamental principles. Thus an object is neither just a compresence of properties

nor a bundle of qualities supported and held together by a Lockean substratum. This last issue requires further discussion, and I reserve it for chapter 6.

3.2.2 Aristotelian principles and the necessity of indiscernibility

A sufficient condition need not be necessary as well. Hence, if the conjunction of a number of items is sufficient for something, it does not follow that every conjunct contributing to this sufficiency is necessary for the thing: there may be other, non-overlapping sufficient conditions which themselves are conjunctions of a number of items. Different non-overlapping conditions independently sufficient for the death of an organism may each be a compound of sub-conditions individually necessary for their fulfillment. If, on the other hand, p is sufficient for q , in other words p implies q , and *only p* is sufficient for q , then, since there would not be q in the absence of the fulfillment of this sufficiency, p is *also necessary* for q , that is, q implies p , too.¹⁴ Why does it turn out that if a sufficient condition is the only one, it is also necessary? If p is the only sufficient condition of q , there being no other circumstances under which q could come about, in the absence of p , conditions are never sufficient for q 's presence. If p were to be suppressed, q would not come about, even if every (other) necessary condition of it were fulfilled: since p is the only sufficient condition, suppressing it would suppress q , and without q no possible accumulation of necessary conditions would make q happen. Thus, granting every other necessary condition of q , the latter does not come about *unless p obtains*, and this simply means that p is also a *necessary* condition of q . There are several ways in which a human being may be killed. These include decapitation, poisoning, electrocution and being impaled on a silver stake through the heart. For Count Dracula, there is no such variety. Suppose for the sake of argument that the last method is the only one possible. Granting that, however remote, every necessary condition for Dracula's death is fulfilled (these should include the conditions of Dracula's existence as well: there being the planet Earth, Transylvania, human blood, and so

¹⁴ Perhaps there is no inconsistency in the idea of q being the case in the absence of p , while only p implies q . But in such a situation q would have occurred without a *sufficient condition*, and hence such a thing does not block the present reasoning. That everything occurs with a sufficient reason is, I think, a physical necessity.

on), he still will not die unless a silver stake is put through his heart, and thus the latter is a necessary condition for the death of Dracula. I think it is now clear that if a sufficient condition is exclusive, it is biconditional with what it is sufficient for, and therefore, every condition necessary to it is also necessary to what it is sufficient for.

Principles of individuation for concrete physical entities are proposed as exclusive accounts. As in analysing concepts, we offer a principle of individuation as the only true account of the matter. No doubt, just as different thinkers analyse the same thing differently, there will exist several proposals for a principle of individuation. All these will be competing accounts that are incompatible, however. To argue for and establish the truth of one is *eo ipso* to refute and exclude the truth of the others. Now, there are two ways in which more than one principle or analysis may be true at once, and these are if such accounts are complementary or equivalent. But if two accounts of the same thing are complementary, neither is complete on its own. If, on the other hand, they are equivalent, they will be interchangeable, and such a situation is quite unlike that of the existing proposals: it would be inconsistent to set forth principles such as matter and the property of being identical with itself, for example, as equally usable alternative criteria that capture the individuality of the same entities. More importantly, equivalent or mutually implying principles are logically related in the sense that they are true or false together. Thus, even if contrary to fact there existed genuine principles of individuation that did not conflict, these would stand and fall together. I submit that for concrete physical things, a true and adequate principle of individuation is either exclusive, or one that admits equivalent criteria. Granting the conclusion of the previous paragraph, it follows that a principle of individuation (along with or without logically equivalent principles) must be both sufficient and necessary for the identity of the things to which it applies, and therefore be, as such, an account of objecthood.

Granting that, as just demonstrated, a principle of individuation is also necessary for the identity of its object, Leibnizian principles requiring at least the Identity of Indiscernibles entail the Indiscernibility of Identicals, namely, Leibniz' Law. They entail, in other words, that given a certain point in time, an object within an actual or possible world cannot have properties other than those it has there. For, whatever properties this object has, it must have them consistently. This does not mean that Leibniz' Law hinges upon the truth of

the Identity of Indiscernibles as an exclusive principle of individuation. As discussed in an earlier section, the Indiscernibility of Identicals holds in its own right, for its denial infringes upon the law of non-contradiction. If two identical things do not share some of their qualities, then accordingly one and the same thing is allowed to have, at a given time, some mutually exclusive qualities: in a spatially overlapping way it is permitted to have a certain quality and its contrary at the same time. Logical adequacy requires that any principle of individuation, and any theory of objecthood, for that matter, observe the Indiscernibility of Identicals. Leibniz seems to have been well aware of such a requirement, but somehow he drew an excessive conclusion from it, thinking that his principle of individuation entailed not only the Indiscernibility of Identicals, but also the thesis that every property borne by an individual at a certain point in time is made necessary for it at that time by this individual's antecedent nature (1973, pp. 19 and 111). This is a strict determinism that excludes different possible careers for objects; it makes every property that the object loses and gains at any time in the future necessary for it at that future point in time.¹⁵ Such a thing is not entailed by the Identity of Indiscernibles' being a true exclusive principle of individuation. Its application at a given time entails only that the Indiscernibility of Identicals applies to the object at that point in time without determining its future stages. Leibniz' Law, moreover, does not exclude different possibilities. It only means that, given a world, if an object there has such and such properties at a certain time, then it must have these properties in its world at that time.¹⁶ The object cannot consistently have them along with other properties, though it could have had other properties.

Let us take, now, any Aristotelian principle of individuation such as matter, substratum or position, and designate it as an object's 'individuator'.¹⁷ Accordingly, anything which has this individuator

¹⁵ These ideas converge with Leibniz' notion of 'hypothetical necessity'. See 1951, pp. 346, 349, 480–1.

¹⁶ van Cleve, 1985, p. 99, extends this to continuant objects. He also objects to the bundle theory, contending that it is committed to a Leibnizian essentialism. Casullo, 1988, pp. 129–30, has shown that the essentiality applies to the object-stage only, and not to the continuant.

¹⁷ An Aristotelian principle may or may not be qualitative. After all, for Aristotle, the matter of any object, e.g., the bronze of a statue, involves every quality of the portion of material that went into the making of it.

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will be identical with the object, and anything which lacks it will be distinct from it. Being an exclusive principle, the possession of the individuator is both sufficient and necessary for identity. Clearly though, there is nothing in it that logically requires or guarantees the qualitative sameness of any two things it identifies. Sharing their properties becomes altogether unnecessary for such things. If there is a principle exclusively sufficient for something, then no other principle is necessary for it (unless the latter is necessary for the former). By the same token, since the possession of the individuator by any second object is exclusively sufficient for its identity with the first, its bearing the same qualities as the first is not necessary at all. By an Aristotelian criterion, the possibility of identifying things that do not share all, or even any, of their present qualities is clearly preserved, and accordingly if two things share the same substratum or matter or position, they are identical even if qualitatively different. This flouts the Indiscernibility of Identicals and, moreover, paves the way to objects with 'contradictory' qualities. It won't do to say that since they involve a logical impossibility, such cases will not and cannot arise, and that, because of this, only things which share all their present qualities can share their individuator. The point is not that we need not worry about the world's going berserk because we take the Aristotelian principles seriously. There is indeed no room for such a worry. Rather, such principles allow contradictions as possibilities, and so much the worse for them. Securing the Indiscernibility of Identicals by imposing it as an extra condition in conjunction with the individuator is to make the latter insufficient, and to say that it is insufficient is to reject it as a principle of individuation.

Suppose one tried to secure harmony with the Indiscernibility of Identicals by placing a relevant condition *inside* the Aristotelian individuator, instead of conjoining such a condition with it. Could one not suggest, for example, that an Aristotelian principle identifies a parameter of the object's constituent qualities such that different determinates of the same determinable cannot share the same parameter? Presumably, a parameter conceived along these lines would be an aspect relating to qualities and would guarantee for them that they exclude every other determinate under the determinable they themselves fall. Thus given an object and its qualities, the parameter would rule out that any object identified with it could possess properties incompatible with those inhering in it. A first question that comes to

mind is whether the Aristotelian individuator thus conceived is the same thing as the parameter it is said to identify. If it *is*, then it concerns the exclusiveness of the constituent qualities of the object, and one needs an explanation of how it performs in this capacity as well as an individuator for the object. If, on the other hand, the parameter and the individuator are not the same thing, we need an account of how the latter identifies the former. In the absence of such explanations the 'parameter' thesis saves the Aristotelian theory from refutation only at the price of rendering it even more mysterious.

Another main difficulty of the parameter thesis is that there does not seem to be a plausible way in which it can stop proliferating (in nature or in aspects) so as to match the diversity of the relevant object's properties. Consequently, it seems it cannot avoid appealing to something like a Leibnizian principle. Here is the point: one needs to know whether the parameter in question is something shared, that is, something possessed in common, by the object's properties. If it is not shared, then there will have to be a different parameter-token for each different constituent quality of the object, and this implies a Leibnizian principle. If it is a shared parameter, on the other hand, since it serves to exclude qualities and is just a single principle, the question arises as to why any quality that has it does not exclude every other, indiscriminately, thus making compresences impossible? Given the absurdity of such a consequence, it must be affirmed that if there existed parameters of the type sought by the account under criticism, they would have to apply specifically, by implying a different effect as regards every different determinable property of the object. After all, as applied to an object's brittleness, for example, the parameter should exclude softness and elasticity, but not its heat, colour or shape! But how does one and the same parameter, shared by all, perform for each of them a very specifically different exclusive function? If this is not supposed to be achieved by 'magic', it seems that either the account has a suppressed premise relying on determinates' own mutual exclusiveness, or it obtains the desired effect by assuming that the parameter in question has a different specialized aspect for every determinable inhering in the object. In any case, commitment to a form of Leibnizianism proves to be inevitable.

Suppose now that these difficulties were met plausibly. The parameter theory would still not be satisfactory, for it introduces a principle of exclusion only, ignoring the requirement of choice

brought in by the exclusiveness. Imagine a situation in which *a* and *b* share the same Aristotelian principle of individuation, but one is red while the other is blue: *a* is *b* and it cannot be both colours at once, and the parameter theory, too, entails this. The trouble is that the theory does not tell us which of the two properties is excluded; nor does it possess the advantage of the ordinary Leibnizian theory of being committed to judging identical only objects that do share all their properties. I conclude that the parameter thesis must be rejected.

Aristotelian principles of individuation cannot be viewed as ontic principles; if they were allowed to be so, they would violate the Indiscernibility of Identicals, thereby implying impossible things. It is the whole thing, therefore, with all its qualities, and not a selected aspect of it, that individuates at a given point in time. Although seemingly trivial, this has been overlooked, and many thinkers have relied on individuator as a basis for their ontologies. Aristotelian principles may be good criteria for the mind's grasping a concrete thing as distinct from any other: the realization that two things are at different positions in space and time or that they are made of different parcels of matter is enough for knowing that they are distinct, without having to check whether or not they share every one of their properties. It is a mistake, however, to think that they individuate in the ontic sense. Let us take a brief look at Quinton's view in this respect. In his search for a plausible principle of individuation, Quinton supplements the Identity of Indiscernibles with the positional properties of the object. He thinks that once one does this, one has a rich but redundant criterion. True, when we look at the matter from the standpoint of an epistemic principle of individuation, this is so. But such a conclusion follows not at all when individuation is conceived in the ontic sense. Since Quinton's target seems to be the latter, I am inclined to think that he commits the mistake I have tried to point out here in an exemplary way: 'Position alone is sufficient to individuate. From this point of view qualities proper are superfluous; there is nothing left for them to do' (1973, p. 24). But what is in fact left for them to do is to guarantee that the principle of individuation agrees with Leibniz' Law, and, opting for an Aristotelian principle, Quinton fails to do this, thereby rendering his account vulnerable to difficulty.

Now I take up the Leibnizian principle that resorts to an alleged property of 'being identical with the object something is'. Let us

assume that objects bear such properties. Accordingly, if Callias and Socrates shared all their properties, then Callias would possess the property of being identical with Socrates, and their numerical identity would be entailed thereby. The problem is that in trying to make the Identity of Indiscernibles sufficient, this method supplements it with something which, by its very nature, is on its own sufficient for identity. Immediately, one cannot help thinking that if there is such a property, then Callias could possess it, and hence be identical with Socrates, without sharing every other quality with him: as in Aristotelian principles, this would violate Leibniz' Law. It seems that if the property in question is to be used in individuation it must be made sure that it applies along with indiscernibility. There are two ways of requiring this. First, indiscernibility may be made a necessary condition of identity in addition to this property, shifting sufficiency to the conjunction of the two. By implication, though, Callias' bearing the property of being identical with Socrates will not be sufficient, on its own, for making him identical with Socrates, and this is as absurd as violating Leibniz' Law. At first sight the second way looks more promising. According to it, two things share the assumed property only if they are indiscernible: now the property is by itself sufficient for identity, but its possession necessitates that the two objects be indiscernible.¹⁸ So conceived, however, the property of 'being identical with the thing something is' is rather unusual: as a single property it is logically equivalent to indiscernibility, where the latter is a condition of the totality of the object's properties. It is very odd indeed that the possession of a single property should necessitate the inherence of every other property of a concrete thing. How can it be an *attribute*, if without it there is no object at all, and having it amounts to having the entire object? Assuming that there are such attributes strikes one as quite implausible.

Could it be protested against this conclusion that my argument criticizes the property in question by appeal to the object's identity, as if the property were something which, in the first place, has to

¹⁸ If we let Lab symbolize the statement that a and b are indiscernible, SIab that they share the property of being identical with a, and Iab that they are numerically identical, then the amended version may be given in the following expressions: Lab $\rightarrow$ SIab, SIab $\rightarrow$ Iab, SIab $\rightarrow$ Lab. The first two of these are claims contained in the passage quoted from Brody above. The third is the proposed amendment. As Brody claims, it follows from these by hypothetical syllogism that Lab $\rightarrow$ Iab. But if the amendment is adopted, then Lab $\leftrightarrow$ SIab will follow as well.

take the object's identity into account? The protest would continue that my playing the notion of identity here against individuating attributes is circular, for questions of identification and identity ought themselves to be settled by reference to such individuating attributes, and not *vice versa*. This type of objection conceives of the property I am challenging as what *makes* the identity of an object, and thus seems to me to confirm my point that reliance upon such a property is bound to encounter difficulties paralleling those of an Aristotelian principle. Moreover, the objection assumes that our grasp of the individuating attributes is prior to our understanding of identity. This assumption is false, however. What is controversial is not the fact that objects are identical with themselves, but the belief that identity is due to such purportedly individuating attributes as 'being identical with the thing something is'. Hence my opinion is that this strategy has not been substantiated at all. I tend to believe that in the notion of an individuating attribute an Aristotelian principle is reintroduced under the guise of a property; the use of the extensively reinterpreted notion of 'haecceity' or 'thisness' has had just this effect (see Adams, 1979).

In Black's counterexample we have seen the reason why the Qualitative Account of objecthood remains insufficient: a presence of universal properties cannot be an individual object. The present argument, on the other hand, disposes of the substratum as individuator. In chapter 2 I have contended that the universal fact that properties never exist independently does not lend support to the idea of a bare particular. Unless, and rather implausibly, a theory assigns each particular object two different kinds of substrata, the present argument disposes of an alleged bearer of properties also. I conclude that in the ontic constitution of objects there is no such thing as a mysterious substratum. As it turns out, therefore, neither of the two rival classical accounts of objecthood is correct.

3.2.3 *The principle*

Very few philosophers have denied that spatiotemporal position is a suitable criterion for *epistemic* individuation, and Leibniz himself is not amongst them (see 1896, p. 238). The reason, according to him, is that even if such a criterion does not individuate, the distinctness of objects is always accompanied by a difference in their position. An

objection to placing position in such a rôle exploits the case of cohabitation (Brody, 1980, p. 15). But this is undercut by my suggestion to be taken up in detail in chapter 4 that, at a point in time, things that coincide at a position do not individuate separately. Such things are not distinguishable by any of their actual intrinsic qualities, and we do not count them as distinct entities. As I have remarked already, the thesis that they are non-identical but cohabiting objects is held through viewing them as continuants which, in their actual previous and possible stages, possess diverse properties and positions. At a point in time, however, only one individual is involved, and the distinction between cohabiting entities seems to be what Scotus would call a formal one.

What is the relevance of position to the individuality of objects? In discussing this topic I will not broach the controversial subject of the ontic independence of positions. I regard positions as neither totally independent of, nor totally dependent on, objects. My view is that positions and objects exist mutually dependently, in the sense that a concrete object can exist only in a position, and that there exist positions only if there are objects. Positions can be specified with relation to objects, and clearly, their particular existence does not depend upon there being objects *in* them. They cannot be seen as properties, for if they were, they could hardly be empty; unlike properties positions can exist without being possessed or occupied. A spatial property specifying and expressing the position occupied by an object indeed inheres in this object. But the position in virtue of which this object acquires such a property does not inhere in the object; on the contrary, it is the position that contains the latter.

What I wish to argue now is that any specific position is a *particular* position. Of course, in claiming such a thing I do not mean that a position exists as a particular *entity*, in the sense that an object or property is said to exist. Particularity does not entail being an entity. In this sense 'being a particular' acquires meaning in contrast with 'being a universal'. In Aristotle's characterization, the latter signifies something's being the case multiply and repetitively, as for example, when something is said to exist or to apply multiply and repetitively. Thus being a universal entails being identical with oneself as a plurality. The opposite of this, i.e., 'being a particular', is for something to be the case uniquely and without repetition. For it to have this qualification is for it to be identical with itself as a single case only,

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i.e., for it to be just one in its entirety. To repeat, therefore, my thesis is that by specifying a position one indicates something particular in just this sense, i.e., something that is repeated nowhere else. This is far from being trivial or obvious, for specificity does not entail particularity. One may specify, for example, a shade of red as carmine, without the latter being a particular: indefinitely many surfaces are coloured in exactly similar specific ways.

Position can be envisaged as a universal, by thinking of an unspecific medium in which any object may exist in spatial relationships to others. Given an existing object, however, no position we specify with reference to it, including its own, will be conceivable as a type. For positions, specificity entails particularity; a specific position can neither be instantiated severally, nor admit several individuals at the same time. Imagining a specific position in different places at once is not consistent: such different places would be different specific positions. There is no way of conceiving the same position elsewhere, and such a thing applies from the points of view of both absolute and relativistic conceptions of space. According to the former, to move the entire framework of objects elsewhere in space, for example, would be to move all objects to other positions. As for a relativistic notion, such a 'shift' is simply a mirage, and moving the entire framework is leaving everything where it is.¹⁹ Of course, a specific position may be said to exist at many different times, and thus let in a multitude of individual objects. These are not circumstances under which positions could be regarded as types or universals, however. What marks universality is multiple applicability at the same point in time.

Finally, conceiving of a specific position at a given point in time, as a *type*, and without requiring it to be at different places is to think of a multiplicity of positions at the same place at the same time, and in one sense at least, it amounts to an outright contradiction. This contradictory aspect aside, the very idea of a specific position-type raises the question how the tokens of that type are discernible from one another. Consider this: everyone will agree that something is not a position, if it cannot contain, and thus be the position of, an individual object. But facts are that if a position is occupied by an

¹⁹ See Leibniz, 1968, p. 205. Indeed, the idea of shifting the cosmos implies absolute space and belongs to the Stoics. Its first recorded version is in Cleomedes' *Theoria Kúklike*, 1.1.3. See Sorabji, 1988, pp. 129 ff., and 220–1.

individual, no other individual object can occupy it at the same time. This is the principle of impenetrability. We have observed that although more than one object can be at a given position, only one individual is allowed there at a time. A statue will occupy its position exclusively from any other statue, block of marble or chunk of copper that is a distinct individual, but it will share this place with the marble or copper that constitutes it, without letting such a piece of constitutive stuff individuate. But if positions were types in the sense explained, it ought to be possible for indefinitely many individuals to occupy the very same position-type, by occupying the different tokens in it. Thus the impenetrability of individuals entails that specific position-types cannot contain more than one of their instantiations within them. I conclude that by necessity, a specific position is a particular position.

If specific positions are particulars and they may each contain an individual but not more, then positions play an important rôle in the distinctness of one object from any other. Thus it appears plausible to surmise that an object individuates as the ensemble of its qualities at a position. For any such proposal to have a chance it must be shown to withstand Black's argument. Since I am not relying on the thesis that positions are ontically independent of objects, I need to ascertain, against Black's case, that positions do not reduce to relational properties. As pointed out earlier, position does not so reduce, because it is capable of being empty and may thus involve nothing which relates to another object. The possibility of positions' being empty distinguishes them from positional properties as well. A position empty of any object could not bear properties. But positional properties are not spatial relational properties either, though they may be expressed in such terms. Positional properties are possessed in virtue of objects' occupying particular positions, and are themselves particular properties. Spatial relations, on the other hand, hold amongst entities occupying positions, and an entity acquires a certain spatial relational property in virtue of being in such a relation to other entities. However specific, spatial relations and spatial relational properties do not have to be particular. As a universal, the same spatial relation can hold in different positions. Given several cars of the same model the spatial relation of their steering wheels to their two rear tyres is specifically the same, but they are at different positions.

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Owing to its extreme simplicity, in Black's world the expression of the spatial relational properties of the spherical objects coincides with that of their positional properties. For a sound judgment, however, the two must be disentangled. Black argues that in his world any Leibnizian principle is satisfied, and hence a counterexample is created, on the basis of the fact that the relata of any pair of mutual spatial relational properties between the two indiscernible spheres are precisely the same. I respond that this sameness is in type, and conceals behind it different tokens. Black assumes that properties borne by objects are universals, and since the perfect symmetry of his case ensures the sameness of relation-types, it will satisfy any Leibnizian principle. But something is amiss here, for, *ex hypothesi*, Black has assigned the two individuals different positions separated by a distance d . Positions are particular, and it follows that the two spheres have different positional properties. Thus the circumstances of the two spheres do not satisfy, after all, the antecedent of Leibniz' Principle, and hence the counterexample that would be created by the falsehood of the consequent does not arise (cf. Hamlyn, 1984, p. 72. See also Lemos, 1988, p. 263). Why was this fact concealed? The reason, as noted above, is that in circumstances so contrived, the positional properties of the spheres are expressed in the same way in which their mutual spatial properties are. This cannot be avoided, for one cannot consistently introduce extraneous factors such as an independent frame of reference. It does not follow, however, that these expressions have to be construed in the universal sense, and once this point is revealed, Black's case dissolves as a counterexample.

The last three sections have established that the Indiscernibility of Identicals cannot be held along with an ontically interpreted Aristotelian principle of individuation that makes no use of indiscernibility. Given a world at a point in time, what individuates an object can be nothing less than the complete compresence of its qualities. I submit, therefore, that the complete form made of a bundle of compresent qualities and position together does individuate (cf. Legenhausen, 1989). An individual object is a bundle of actual intrinsic properties at a certain position. I cannot claim, however, that two things are indiscernible, and share their position at a point in time, if and only if they are identical. As I declared earlier and have promised to discuss more extensively in the next chapter, the reason is that being an individual, that is, being a distinct entity at a point in time, does not

entail the identity of everything that shares just those actual intrinsic properties at that position.²⁰

The principle of individuation I have proposed yields a basically qualitative analysis of objecthood. This is not the classical version of the Qualitative Account, however, for basically two reasons: first, it makes necessary reference to positions as particulars, and second, it makes no commitment to the view treating positions as properties. But what difference does being at a particular position in space and time make to a bundle of compresent properties? At particular positions there are *property instances* and the specification of a position for a bundle yields a particular bundle of *particular* properties (see Campbell, 1976, p. 215). The classical version of the Qualitative Account was wrong in treating properties as shareable universals. If, at a certain point in time, *a* and *b* share all their actual intrinsic properties, since these are particular properties compresent at one designated position, *a* and *b* cannot be distinct individuals.²¹ If *a* and *b* have differing historical and modal properties they will be said to make in union one individual, while they remain non-identical. *a* and *b* are one individual *and* identical if they share all their properties, historical and modal included. That properties at definite positions are particular properties has not been demonstrated yet. We need conclusive reasons in order to make the present view preferable to Aristotle's doctrine that universals exist in concrete objects, and therefore at particular positions. It is not inconsistent to say that even compresent properties at particular positions make bundles of universals. I will consider and reject this tenet in chapter 6.

The present account cannot be an adequate principle of individuation *through time and across possibilities*, for it does not allow for occurrent or possible differences in the properties of the object. The object changes through time, and could have changed differently from the way it has. If we impose restrictions upon the extent of change that the object is allowed to suffer while remaining the thing it is, then we assume essentialism relative to the aspects of the object

²⁰ As Noonan says, 'counting is not always in accordance with identity *simpliciter* (otherwise we would have to accept that there are many more people than we think there are)': 1985c, p. 152.

²¹ This answers van Cleve's objection, 1985, pp. 96, also 101–2, to the bundle theory, that it 'requires the principle of the Identity of Indiscernibles to be a necessary truth' while in fact it isn't.

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the change of which we disallow. Those unchanging aspects of the object constitute its principle of individuation through time and across possibilities, and such 'essences' are both ontic and Aristotelian in character. They may vary gradually from 'bare particulars', involving no formal aspects, to kinds, and then to 'particular essences' that involve some of the distinguishing properties of the individual in addition to the properties of its kind. The end of the spectrum is marked by the view that whatever change happens is necessary to the individual, rendering every property of it through space-time necessary. It has been common usage to call the latter view 'Leibnizian Essentialism'.

4

Identity and individuality

4.1 IDENTITY AND COHABITANTS

To be an individual is to be distinct from the rest of the world, and distinctness involves spatial separateness. But then, there is reason for surmising that distinctness is not the same thing as non-identity, and consequently that non-identity does not proliferate individuality. If two things are distinct individuals they are not identical, but the converse does not seem to follow. It appears that things may fail to be identical without being distinct individuals; that non-identity does not imply individuality. The reason is that non-identical things may coincide, that is, they may occupy the same positions in space and time. As has been argued by some philosophers, there seem to be good grounds for believing that an articulated object is not identical with the sum of its parts, or in other words, with the portion of matter out of which it is made: although the two 'cohabit'¹ in the same place at the same time, sharing all their present actual qualities, they may differ in at least some of their historical and modal properties. I call this 'the non-identity thesis', for convenience. In fact, if there exist articulated objects over and above ordinary bodies or parcels of matter, then, since articulated things must be made out of portions of matter, anything such as the former must overlap with a thing of the latter category. As illustrations of articulated objects said to be coextensive with the pieces of matter constituting them we may think of the following sorts of cases: a statue and the piece of copper out of which it is made, a human being and the sum of parts of flesh and bone that make it up, the sweater and the yarn of wool, the bicycle and the metal parts that constitute it.

The issue of distinctness aside, it is by no means a universally

¹ In the relevant literature this condition is also denominated by the expressions 'co-inciding', 'overlapping' and 'being coextensive'. I will use such terms interchangeably.

accepted opinion that things said to cohabit are *in fact* non-identical. Some thinkers believe that cohabitation is merely apparent. The reason, in their view, is that the so-called articulated object, said to inhere in the portion of stuff, is just an Aristotelian mirage. Articulated objects alleged to exist over and above the sum of parts constituting them are the figments of our conventions, which, in their turn, derive from various human interests. According to them the true ontological relation that holds between purported cohabitants is identity. What has been expressed just now is an anti-essentialist point of view regarding kinds, and such an approach does not permit articulated objects any autonomy beyond the portions of matter that are said to make them up. Hence on this view there will arise no divergence between the notion of distinctness I advocate and the concept of identity: the statue and the piece of copper are one individual, because they are identical.

Most of the present chapter is devoted to the examination of the ontic status of, and relation between, the things said to exist coextensively. I will begin (in 4.1.1) by expounding some arguments which, I believe, establish that constituents and what they constitute are not identical. I will consider and then refute a criticism of one of these arguments. Section 4.1.2 will have a dual purpose. There, I will consider and reject the relativization of identity. By this rejection I hope to block both a certain challenge to Leibniz' Law, which I have so far assumed to be a logical truth, and a relativistic solution to the problem of the relation between the so-called cohabitants. The remaining part of the chapter will look into a number of other interpretations of this case, including the view that conceives of cohabitants as non-identicals. Finally, I will formulate my own 'Aristotelian' version of the latter.

4.1.1 Reasons for non-identity

Philosophers of widely different periods have reinterpreted Chrysippus' puzzle of Theon and Dion, and a plausible construal of this illustrates how an object is not identical with the sum of its parts. Dion is a man and his right foot is a part of him. Let Dion-minus-his-right-foot be called 'Theon'. The question is whether 'Theon plus Dion's right foot' is identical with Dion. They are not, since if Dion loses his right foot in an accident he continues to live, whereas

'Theon plus Dion's right foot' does not survive. A sum is defined so that it exists as long as all its parts exist.² Since only Dion and not 'Theon plus Dion's right foot' survives the amputation, the two are *not identical*.³ They exist, nevertheless, in exactly the same places at the same times. Hence Dion and 'Theon plus Dion's right foot' are non-identical cohabitants.

A second type of argument exploits the differences in the historical and modal properties of cohabitants. It proclaims that some objects are coextensive things sharing all their properties temporarily, while possessing different persistence conditions. Consider the following: an artist acquires a piece of copper which at t1 he moulds into the form of the head of Socrates. At t2 the rotting nose and ears of this statue are replaced by parts made in bronze. The argument concludes that the piece of copper and the statue between t1 and t2 are non-identical, for, first, they have unshared properties before t1 and after t2: before t1 the piece of copper does not have a shape like that of a human face, and after t2 the statue has a nose and ears in bronze. Secondly, the two entities have different persistence conditions. To persist, the piece of copper should not lose any of its parts, though it does not matter what shape it acquires. Conversely, the statue may survive with a gradually altered material composition, though not with a different shape. Given both criteria, therefore, in the case described the object before t1 is a piece of copper, but not a statue. Here the differences in historical properties are chosen amongst just

² Suppose one denies that after the destruction of the foot 'Theon plus Dion's right foot' ceases to exist. An absurd consequence of this will be that since Theon survives the amputation (Chrysippus himself disagrees with this) nothing will differentiate Theon and 'Theon plus the foot', yet the two are not the same. Surely, their histories do not differentiate them, since up until the time of the leg's destruction their history is common, and after that time, whether or not *they* have different futures is precisely what we want to know. Our question is whether they both survive. (I have borrowed the final assessment of the case from Lowe, 1989, pp. 85–6.) For Chrysippus' puzzle see Sedley, 1982, and Sorabji, 1988, pp. 104–5. The puzzle has been introduced to contemporary discussion by Geach, in the form of a cat and a proper part of it that lacks a tail. See Wiggins, 1968, pp. 94–5, Noonan, 1980, pp. 22 ff., on the same issue. Geach and Noonan have used the case in challenging Leibniz' Law, but as Noonan admits, 1986a, p. 8, such an attempt does not establish Relative Identity.

³ See Doepke, 1982, pp. 57 ff. Another closely related question concerns whether Dion, who survives the operation with a single leg, is identical with Theon, who was defined as Dion minus the foot. Surely, the two share every intrinsic actual property. My view is that they are not identical and that Theon can be regarded as a constituent part of Dion. (In fact, after the operation it constitutes the latter fully, as its improper part.) For the opposite view see Burke, 1994a, 1994b.

those to which persistence is sensitive. Similarly, after t_2 the statue that existed from t_1 on continues to persist but the piece of copper that existed until t_2 is no longer.

In his recent attack upon the thesis that cohabitants are not identical, Michael Burke (1992, pp. 12–17) agrees with the description of the case thus far. His critical point, however, is that when it comes to differentiating the piece of copper and the statue at any point in time along the stretch of their alleged overlap, i.e., between t_1 and t_2 , the non-identity thesis is committed to appealing to a difference in sorts, for there is no other criterion available. But the non-identity thesis is, in the first place, an explanation of what it is for objects to differ in sort. He claims that there is no ‘plausible explanation for the alleged difference in sort’ (1992, p. 16), and that ‘differences between Statue and Piece could be explained only by reference to the very difference they are themselves supposed to explain: the alleged difference in sort’ (1992, p. 15). Thus Burke rejects the non-identity thesis on the grounds that it begs the question. To show that these reasons are not compelling, I will take a closer look at his arguments.

There is no doubt that, as Burke declares, from t_1 to t_2 , the statue and the piece of copper share all their qualities; in fact, they share the very same atoms. Moreover, ‘since they are coextensive any object spatiotemporally continuous with one is spatiotemporally continuous with the other. If one but not the other is identical with a certain past or future object, the only apparent explanation for this is that one but not the other is like that object in sort’ (p. 15). Something spatiotemporally continuous with the object that exists between t_1 and t_2 with a human-like shape had, before t_1 , no such shape. For this to be used by the non-identity thesis as a relevant difference, says Burke, it is necessary to refer to sorts, for only the latter allow us to employ the lack of a certain shape as evidence for the thesis that something that exists after t_1 did not exist before, in spite of the continuous existence of something in the same place before and after t_1 . Unless we make such an appeal, we do not advance anywhere beyond the suggestion that the object after t_1 had no face-like shape before t_1 , which is a description that ignores the difference to be established. I agree with him that if we restrict our attention to cases of overlap of the type described above, in order to make use of historical properties in differentiating the objects purported to overlap, it is necessary to refer

to sorts. The reason for this seems to be that the present judgment of differentiation must proceed through the *persistence conditions* associated with the entities alleged to be non-identical yet coextensive. Where there is a manifestly single continuant, then the absence of a certain property in the past is relevant to a present diversity only if failure to possess this property precludes the existence of a present object, without having the same implication for something else that overlaps with it.

It is hard to grasp here an immediate circularity, however. Although one sees that the historical differences serve to discern overlapping objects only if we also appeal to kinds, one is hardly compelled by the comment that 'historical differences ... are themselves supposed to explain ... the alleged difference in sort'. They explain the *objects'* difference, which concerns the possession or lack of a certain crucial (essential) property, and which amounts to these objects' differing in *sort*. But those historical differences alone are not meant to explain the difference between the sorts themselves, i.e., to explain what it is for things to be of different sorts. Only if they were also meant to explain the latter would circularity arise. Explaining difference *in* sorts does not entail explaining the relevant differences *of* sorts. This is, therefore, my first answer to Burke.

At any rate, there is reason for doubting that Burke's objection will still apply in a slightly altered case involving the 'transfer of matter'. Suppose that before t_1 there is a statue in bronze and an amorphous piece of copper, and through replacing the parts of the former gradually by those of the latter a copper statue is obtained at t_1 . For the sake of clarity let us avail ourselves of the proper names 'Statue' and 'Piece' Burke introduces for denoting unambiguously the statue and its constitutive matter between t_1 and t_2 . In this altered case, before t_1 , there is something x (the statue in bronze) spatiotemporally continuous and exactly similar in shape to Statue, and this thing does not share with Piece any of its qualities or any of its atoms. Moreover, Piece shares all of its atoms and many of its qualities with something y (the amorphous chunk of copper) which is distinct from x , and which has no shape that resembles Piece in any way. The point is that once we are allowed to refer to the coextensive Statue and Piece unambiguously, it becomes possible to distinguish the two by distinguishing only one of them from what is spatiotemporally continuous with both, i.e., from x , on the basis of *unshared* properties, and such an

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exercise does *not* at all require making essential use of sortal concepts or persistence conditions. Piece is spatiotemporally continuous with x, but, unlike Statue, it possesses no property in common with x. If 'Piece' refers unambiguously, its referent *cannot be identified* with x. If x could be identified with Piece, any two amorphous lumps rendered spatiotemporally continuous by gradual replacement would have to be regarded as identical, and such a notion is highly repugnant. Now since Piece is not identical with x, and if Statue is the same thing as x, then Statue is not the same thing as Piece. The claim that Statue is identical with x does *not* rely on subsumption under kinds, and, under the circumstances, it is the only plausible alternative to viewing x as destroyed.⁴ This seems to establish the non-identity thesis on the very conditions set by Burke.

So far, the non-identity thesis has revealed no *petitio principii*. But it may be said that essentially the claim of circularity hinges on Burke's second argument. This is directed to the idea that 'the (alleged) difference in sort between Statue and Piece is explained by the (alleged) difference in their persistence conditions' (p. 16). Burke proclaims that in differentiating the objects one's appeal to persistence conditions presupposes an appeal to difference in sorts: it is just *because* they belong to different sorts that the individuals have these specific persistence conditions. Thus there is a circularity, for although the difference in persistence conditions is intended to explain the objects' difference in sort, it is itself based on the relevant difference in sorts. 'If the difference in the persistence conditions of Statue and Piece is used to explain their difference in sort, then there will be no apparent way to explain the difference in their persisting conditions . . . If Piece, but not Statue, could survive a drastic change in shape, surely there must be something that *accounts* for this difference' (p. 16).

Earlier we have seen that appeal to persistence conditions is not the only possible way of distinguishing Piece from Statue. Let us grant, however, for the sake of argument that, since the case at hand does not involve fusion, such an appeal is requisite here. Will Burke's point follow? My second answer to him begins by distinguishing the following tasks from one another: (i) explaining the difference between particular entities by appeal to their persistence conditions,

⁴ Suggesting that x has been destroyed would be groundless, for nothing has happened to x to put it out of existence. After all, everything x possesses distinctly from Piece survives intact in Statue.

where such an explanation counts as explaining the entities' difference in sort, and (ii) explaining how the relevant persistence conditions are grounded, i.e., explaining *how sorts determine the relevant persistence conditions*. It seems that (i) presupposes (ii). Unless one has an account that can function as (ii) one does not have a non-arbitrary way of doing (i). But (ii) is a more general task; (i) is just one possible application of (ii). There seems to be little reason for believing that the performance of (i) in a particular case necessitates carrying out the full task of (ii) *within the same case*. Such a demand is unduly extreme and is, I think, inappropriate. The task of the non-identity thesis is (i), and it is highly controversial to proclaim that its responsibilities should also include (ii). Rather, as a broader and more general enterprise, (ii) is among the concerns of the doctrine called kind-essentialism. In presupposing essentialism the non-identity thesis assumes a certain answer to (ii). If essentialism fails, it, too, goes with it. It is not, however, the duty of the non-identity thesis to solve on the spot a broader issue such as (ii).

To emphasize that Burke's demand is excessive (and thereby begs the question) suppose, for a moment, that kind-essentialism is false and that there exist no objective natures beyond our conventions. Let us assume that all our talk concerning articulated objects and kinds is based on conventions. It will follow that the non-identity thesis is false as an ontological thesis, and that when we speak of artifacts we refer to abstract conventional entities. But the point is that if the demand made by Burke's objection is valid it shows that even such (*non*-essentialistic) ordinary talk is circular! The obvious reply to Burke's 'refutation' should be that since we have conventions underlying our concepts of sorts and the persistence conditions of entities we regard as falling under these sorts, we are not in a position to re-establish the latter on every occasion we speak about artifacts over and above their constituent matter. The very existence of conventionally based sortal concepts blocks Burke's alleged circularity. Similar considerations apply with relation to a full-fledged essentialism. In requiring that the non-identity thesis satisfy (ii) within the same single case in which it is tackling (i), Burke is ruling out an *empirical* explanation for (ii). If one possesses an empirical account of the difference of persistence conditions as related to specific kinds, then using such conditions in distinguishing entities with reference to their sorts will not in turn require using the same sorts in establishing the same conditions. As will be discussed later, however,

espousing an *a posteriori* methodology is among the most striking traits of contemporary essentialism.

4.1.2 *Relative identity and Leibniz' Law*

In arguing that an object is not identical with the sum of its parts or with the portion of stuff that constitutes it, we have been appealing to Leibniz' Law. What is more, the argument of chapter 3 has been pivoting, similarly, around the same law: if two things possess properties that are not common, then they cannot be identical. I believe that in its straightforward unrestricted reading this law is a logical truth. Although I join a majority in making this contention, I cannot simply assume it. Leibniz' Law has been challenged on the basis of both counterexamples and arguments, and I owe some explanation before I proceed any further. The purpose of this section is to offer such a digression in summary.⁵ As an ontological claim, the Indiscernibility of Identicals applies primarily to individuals and their attributes, since it states that two things cannot be numerically identical if they do not have all their properties the same. If they were identical without sharing all their properties, by implication one and the same thing would be such that, with respect to at least one property, it would both possess and not possess it. Such a consequence infringes on the principle of non-contradiction.

It will emerge later that the present work views kinds or essences as structural properties that take simple attributes for elements. Thus, although I recognize a difference between the 'is' of predication (as in '*a* is white') and the categorial 'is', or the 'is' of instantiation (as in '*a* is a rabbit') (from Lowe, 1989, p. 3), an individual falling within two different kinds would be, from my point of view (as it would be for many others), a direct violation of Leibniz' Law. If there is reason for saying that an individual *a* is identical with another individual *b* within a kind *F*, though only one of *a* and *b* falls under another kind *G*, and hence it remains impossible to identify the two under *G*, the situation described will amount to a counterexample to Leibniz' Law. What is known in the literature as the thesis of Relative Identity maintains just

⁵ I will not consider arguments challenging the principle of substitutivity, an application of the Indiscernibility of Identicals. First, within the framework of philosophical logic there exist effective responses to such challenges, and second, even if opaque contexts formed an exception to Leibniz' Law, one could still hold it true within ontology.

this.⁶ David Wiggins has forcefully argued against this approach that it faces the undesirable consequence of flouting the Indiscernibility of Identicals. It will not do, however, to reject Relative Identity purely on these grounds, especially if one is trying to establish whether or not Leibniz' Law is a logical truth.⁷ In the rest of this section I shall give brief enunciations of Relative Identity and of its antithesis, Absolute Identity. I will summarize an argument by Geach in support of relativism, and two 'absolutist' responses to it.

According to Relative Identity, the individuation and identity of particulars is radically affected by the way in which such entities fall under sortal concepts: 'a particular *a* may coincide with some specified material particular *b* when individuated under some of these concepts and not coincide with *b*, but be distinct from it, when individuated under others'.⁸ As Geach has said, 'On my view of identity I could not object in principle to different *As*' being one same *B*' (Wiggins, 1980, p. 157). Such a thesis must be distinguished from that of the sortal dependency of identity which amounts to the idea that 'if *a* is the same as *b*, then it must also hold that *a* is the same *something* as *b*' (Wiggins, 1980, p. 4); that a statement of identity cannot have a truth value unless the identification is made under a sortal concept. Wiggins has emphasized that the thesis of Sortal Dependency does not entail Relative Identity, and that it is consistent with Absolute Identity, the view that rejects relativism. Wiggins' argumentative purpose is to establish that the thesis of Sortal Dependency and Absolute Identity are in fact together true. The latter is the philosophical position that if *a* and *b* are identical under one sortal concept *F*, then for any other sortal concept *G* under which *a* can be properly subsumed, *b* is identical with *a* under *G* too (1980, chapter 1). Absolute Identity denies that *a* and *b*, which are the same *F*, can be different *G*s, and thereby rejects Relative Identity.

The present approach presupposes Absolute Identity. It is not my intention, on the other hand, to submit a novel argument in its support or to describe existing arguments in detail. I shall review some main points only.⁹ I begin with Geach's 'classical' argument for

⁶ Principal adherents of this view include Geach, 1968, Griffin, 1977 and Noonan, 1980.

⁷ I agree with Lowe, 1989, p. 78, in that such a move would be, after all, circular against Relative Identity.

⁸ Wiggins, 1980, p. 16.

⁹ A lucid discussion critical of Relative Identity is in Lowe, 1989, chapters 4 and 5.

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Relative Identity. Geach compares two reasonings consisting of propositions 1,2,3 and 4,5,6 below.¹⁰

- (1) Heraclitus bathed in a river yesterday, and bathed in the same river today.
- (2) Whatever is a river is water.
- (3) Heraclitus bathed in some water yesterday, and bathed in the same water today.
- (4) For some x , x is a river and Heraclitus bathed in x yesterday and Heraclitus bathed in x today.
- (5) For any x , if x is a river, then x is water.
- (6) For some x , x is water and Heraclitus bathed in x yesterday and Heraclitus bathed in x today.

Geach says that according to the accepted view 1 is equivalent to 4. Furthermore, since 2 and 5 are both true and equivalent, just as 6 is inferable from 4 and 5, 3 too should be inferable from 1 and 2. Clearly, however, while the former move is valid 3 does not follow from 1 and 2. He first concludes that the analyses of 1 and 3 as 4 and 6

which stand and fall together must both be rejected. It is easy to see what has gone wrong; (6) tells us that Heraclitus bathed in the same something-or-other on two successive days and that this something-or-other 'is' water. This does indeed follow from (4) ... but it is a much weaker proposition than (3). 'Being the same water' cannot be analysed as 'being the same (something-or-other) and being water'.

(1968, p. 151, numbers in brackets my adjustments)

In other words, ' a is the same river (water) as b ' is not to be analysed as ' a is a river (water) and b is a river (water) and a is the same as b ', and such a thing establishes that envisaging identity as traditional logicians did, in the absolute sense, is untenable. Instead, Geach recommends that ' a is an F ' be understood as ' a is the same F as something', where the former is a derelativization of the latter.

I will mention two lines of 'absolutist' defence. One of these maintains that Geach's argument is not sound, for it assumes that according to absolute identity, just as 1 is analysed as 4, 3 too is seen as logically equivalent to 6. Putting himself in the shoes of his rival,

¹⁰ 1968, pp. 150–1. For convenience, I skip the redundant versions of 3 and 6 in Geach's own exposition.

Geach asserts that the logical renderings 1 to 4 and 3 to 6 'stand and fall together'. This is unwarranted, though: absolutists deny that 3 can be analysed as 6. To say that *a* is water is not stating the sort or kind of that thing. In other words, '*a* is water' is not a statement where the 'is' is of instantiation. In such a case it expresses *constitution*, specifying the sort of stuff out of which rivers are made (Wiggins, 1980, pp. 30–3). Such a sentence tells the kind of material of which *a* is made, and hence is not on a par with '*a* is a river' which specifies the kind of thing *a* is.

Now according to Absolute Identity, every version of the relativist argument imputes to its rival, unfairly, the false belief that any proposition of the form '*a* is (an) *F*' is instantiative (categorical), but this is not always done *via* conflating the 'is' of instantiation with that of constitution. One other example, found again in Geach's work, is where this philosopher treats '*a* is a man' and '*a* is a herald' as having the same logical structure.¹¹ The absolutist response to such a treatment takes the form of denying that 'herald' is a sortal term and that '*a* is a herald' specifies the kind to which *a* belongs. Instead, this sentence means that '*a* occupies a certain heraldic office, carrying with it certain titles and duties ... To speak of heraldic offices is to speak of abstract entities of a certain kind' (Lowe, 1989, pp. 46, 49). Fallacies arise on the part of the relativist because he does not duly recognize the relevant differences in the uses of 'is' and in the status of predicates. Some predicates may be only apparently sortal, and treating them as 'really' sortal overpopulates the object ontology, transferring many abstract entities into the world of concreta, and classifying stuff amongst articulated things.

The second method by which Geach's argument is undermined does not rest on the distinctions discussed above. Instead it grants that the 'logical isomorphism' assumed by the relativist holds between statements such as '*a* is a man' / '*a* is a herald' and '*a* is a river' / '*a* is (a) water'. After all, in the case of the latter pair, there is even independent lexical support for the assumption. In addition to its interpretation as a mass noun, there exists a sense in which water is a count noun (Lowe, 1989, pp. 52–3). But once one grants the parity Relative Identity relies on, a fresh difficulty arises: proposition 5 (and

¹¹ 1980, 174 ff. There are a number of other cases. Besides the equivocations we consider in the main text, Wiggins, 1980, chapter 1, for example, discusses alleged cases of relative identity based upon confusions of tensed and untensed discourse.

the counterpart of 5 in Geach's other argument, namely, 'For any x , if x is a herald, then x is a man') becomes false. According to Jonathan Lowe, an absolutist, 'this, at bottom, is because rivers and waters have *different criteria of identity*, and an individual of one sort or kind cannot also belong to another sort or kind with a different criterion of identity from that of the first' (1989, pp. 50 and 53). He demonstrates the point by a *reductio*. Suppose one said that the same a is both a river and a water. Now river and water have different criteria of identity; given a river and a water (the body of water making that river), the evaporation of half of the volume of the water would terminate the existence of that (body of) water without affecting the existence of the river. Thus if a is both a river and a water, upon the occurrence of such an incident one would have to say of a that it both does and does not cease to exist, an absurd consequence (p. 58). This argument applies generally, and indicates the existence of a restriction for claims that place individuals within more than one kind. That the same individual instantiates two distinct sorts can be asserted without absurdity only if the kinds involved are either related as species to genus, or the individual belongs to a third sort which is subordinate to both of the kinds (p. 54). That is, a certain individual is either a horse and a mammal, or, since it is a mule, it is both a horse and a donkey, and therefore also a mammal. In contrast, a river cannot be said to be a sub-species of water, nor can a herald be viewed as so related to the category of humans. The conclusion is that since the argument on behalf of Relative Identity fails, no compelling reason is brought against the absolute conception of identity. And *a fortiori*, there exist no grounds for doubting that Leibniz' Law is a logical truth.

Similar ideas help us in finding a solution to a familiar puzzle presented by Geach. Geach regards this puzzle as another positive argument in support of Relative Identity. He thinks that absurdity cannot be averted without appeal to Relative Identity: Tibbles, a cat – just one – is sitting on the mat. Geach defines ' c ' as 'the largest continuous mass of feline tissue on the mat'. He then judges that c is a cat. Now one may think of c_1 , and c_n , as consisting of the same mass of feline tissue making up c , with the exception that c_1 is one cat-hair less and c_n n cat-hairs less than c . But if c is a cat, then c_1 and c_n should also be cats: ' c_n would clearly be a cat were the hair h_n plucked out, and we cannot reasonably suppose that plucking out a hair *generates* a cat, so c_n must already have been a cat. So, contrary to our story, there was

not just one cat called “Tibbles” on the mat’ (1980, p. 215). We are led, therefore, to a conclusion hardly anyone would be prepared to endorse. According to Geach the only plausible way of settling the difficulty, harmonizing at the same time with intuition, is to adopt a relativistic conception of identity. Such a thing will involve suggesting that c_1 , c_n and c ‘are not three different cats, they are one and the same cat’ (1980, p. 216). The three, however, are *not* the same lump of tissue. Under one concept they are identical, while under another they are different.

I think it is clear that not many will dispute the fact that c_1 , c_n and c are different lumps of living matter, and that on the mat there is only one cat. Unless one shares the same ontic presumption as Geach, however, one lacks reason to regard any of the c ’s as a cat, let alone to identify the three under the sortal concept of a cat.¹² As discussed earlier, an object is not identical with the sum of its parts. Unlike an object’s parts, which may be destroyed by the loss of even the minutest of their own parts, the object is not destroyed through the destruction of some of its parts. Hence we may say that if c is a lump of tissue which, as Geach concedes, exists no longer even if a single hair of it is plucked off, then c is not a cat, for a cat survives such an operation. The only way available to claim that c is both a lump of tissue and a cat seems to be through assuming relative identity, and such a thing violates the restrictive principle cited above. But unless it is established independently, this assumption would beg the question. As we have seen above, the main argument buttressing such a view is far from being decisive. We have good reason to think that Geach’s case of feline tissue is not concerned with Tibbles or with cats; rather it is about the constitutive stuff of cats. We have protected Leibniz’ Law at the price of regarding a structured object and its constitutive matter as different (non-identical) things cohabiting the same place at the same time. A new question arises here: are we forced to say of what is, by our empirical intuitions, a single individual, that it embodies two objects? Does cohabitation have to be of *individual* objects? This question will be the central topic of what remains of the chapter.

¹² Lowe, 1989, p. 69 says that it is ‘just *unintelligible* to suggest that the lumps of feline tissue c (or any of the other lumps mentioned) *is a cat* – at least in the sense in which it is correct to say that *Tibbles* “is a cat”’.

4.2 REINTERPRETATIONS OF COINCIDENCE

Thus far my purpose has been to supply reasons for not regarding what seem to be cohabitants as identical: I have denied that the coincidence of objects is a mirage. But I have objected also to the handling of cohabitation by relativizing identity. We do not have compelling grounds for reinterpreting the concept of identity in the way such a move requires. Before I begin assessing the idea that cohabitants are non-identical individuals, there is an account I wish to consider only briefly. An explanation of how, upon being given the relevant form, a chunk of copper yields a copper statue without entailing cohabitation is made available by the doctrine of temporal parts. According to this approach, the temporal stages (or 'temporal parts') of the copper statue are, at once, stages of the statue and of the chunk of copper. This is not because there are two actually overlapping individuals at the same spatial positions through time. Rather this is because the statue and the chunk are four-dimensional objects extending through time and merging into one another in the sense of having, from a stage onwards, a *common part* (see Quine, 1963, pp. 65–6; Lewis, 1983, pp. 61 ff). This is quite an elegant solution, but its acceptability is conditional upon whether the notion of four-dimensional 'perdurers' is welcome. Since I reject such entities in the next chapter, I shall have to stay away from the theoretical advantages temporal parts promise.

4.2.1 *Are cohabitants distinct?*

This brings me to the consideration of cohabitants as *individual* objects which overlap through a period of time. This type of account is based on the arguments we have gone through in 4.1.1, and contends that at the position at which, in our ordinary assessments, we say there exists a copper statue, there are (at least) two objects, a statue and a chunk of copper.¹³ I have explained already, in 3.2, that philosophers who defend the existence of distinct cohabitants do not at all regard this as a refutation of impenetrability. Moreover, in so far as the

¹³ Some philosophers see the position as even more crowded. In addition to the statue and the chunk, they maintain that in the same position there also exists copper as matter. I do not object to such a treatment as long as we do not regard the chunk and the particular quantity of copper said to cohabit in the statue as individuals.

articulated object is treated as a different (non-identical) entity from what constitutes it, this approach lays a necessary foundation for kind-essentialism.¹⁴

Many others have found, however, the interpretation of cohabitation as the coincidence of two distinct individual objects highly counterintuitive. I think the latter are right, but it should be pointed out that such an interpretation is not a logical consequence of the arguments establishing the non-identity of the objects said to cohabit. If one adopts, as I do here, a notion of distinctness, and hence of individuality, as (at least) separateness in space and time, then, granting that there are non-identical cohabitants, it follows that indistinct things may be, nevertheless, non-identical. As I have suggested at the start of the chapter, one may distinguish the identity of things from their individuality. The idea which repels is the treatment of cohabitant objects as *distinct individuals* which overlap. The suggestion, on the other hand, that two cohabitants are non-identical but indistinct objects which form a single individual is not to make such an offensive claim. Here, 'forming a single individual' does not mean that the two objects are the same individual. As I intend to argue, only one of the two is an individual; the other is an object that is *not* an individual.

Thus what leads many to abhor cohabitation is the presumption, often associated with it, that non-identity is distinctness. Such a presumption is responsible for the inference, from the true belief that an articulated object and its constituent matter are non-identical things, to the problematic conclusion that cohabitants are distinct individuals. Hence the impasse that while on the one hand 'it is absurd to say and literally mean that two things that were numerically distinct have become numerically identical' (Johnston, 1987, p. 121), it is, as Lewis says, no less outrageous to count the cohabitants separately. But given a point in time, the objects would be counted separately only if they were regarded as distinct individuals. 'It reeks of double counting to say that here we have a dishpan-shaped bit of plastic that is just where the dishpan is, weighs just what the dishpan weighs ... and so on. This multiplication of entities is absurd on its face' (Lewis, 1986a, pp. 252-3). If cohabitation is understood as the overlap of distinct individuals 'it

¹⁴ Proponents of this view include Wiggins, 1968, 1980, pp. 60 ff., and Lowe, 1989, p. 14.

leads to overpopulation. To count the population at a given time, we can count the continuant persons who have stages at that time or we can count the stages ... The count of stages is the count we accept' (Lewis, 1983, pp. 62–3). If we assume that non-identity is distinctness then 'Some one *might* say that ... two objects [are] numerically distinct simply in virtue of their having different histories. But this I cannot conceive of; if the meaning of "material object" is such as to allow the conceptual possibility of this, then I do not understand "material object"'.¹⁵

I share the intuitive reluctance to admit more than one individual at the same place at a given time. I agree that such a tenet would be, as Harold Noonan puts it, 'an absurd view of the number of entities present' (1988a, p. 222). But I think that even though 'there is manifestly just one entity', it is not adequate to claim, in order to avoid multiplying individuals, that in a special 'predicative' sense the constitutive material of an object belongs to the kind of this object, without being identical with it. After all, on the presumption I have mentioned above, such a proposal too is prone to multiply the individuals said to reside in what is manifestly one substance, though it keeps them under the same kind. Thus I cannot support Noonan's view when he maintains that 'the collection of planks constituting a ship at a certain time would itself then qualify as (predicatively) a ship notwithstanding its non-identity with the ship it constituted' (1988a, p. 221. See also 1986b, pp. 101–2). Moreover, as Lowe has pointed out (1987c, p. 203), the collection of planks constituting the ship or the chunk of copper making up the statue cannot survive the loss or change of any of their parts, and such a persistence condition is totally unlike that of structured things such as ships or statues. The latter kinds cannot be predicated of materials.¹⁶

We should not allow a greater number of individuals than those we are actually and empirically able to count at a time, avoiding the

¹⁵ van Inwagen, 1981, p. 125. See also pp. 126 and 128 where van Inwagen 'simply dismisses' the rejection of identity. See also Burke, 1992, p. 13.

¹⁶ In 1986c, p. 219, Noonan describes Chisholm's three accounts concerning entities said to exist in a structured object that gradually changes its material constitution. The second account, which eventually leads to relative identity, begins with an idea I share: 'it is a mistake to suppose (as philosophers are prone to) that in everyday life counting is always by identity, i.e., that x and y are counted as one just in case $x=y$ '. I cannot accept, however, that the principle by which we count things in everyday life is identity in a loose and popular sense, i.e., a concept that does not require the indiscernibility of its terms.

multiplication of individuals in a way that yields more than one in every physical body. But does this not overlook the relevance of the historical and possible future properties of the cohabitants? If the chunk of copper possesses the property of having been amorphous at some past date, while the statue lacks it, do the properties, on the basis of which we conclude that the cohabitants are not identical, not make these things distinct individuals as well? Can one thus not maintain that the cohabitants differ in their actual intrinsic properties as well? My answer is that they do not, at any rate, not as cohabitants. Saying of an object that now (when it cohabits with something else) it has the property of having been so and so in the past is to state that this thing now has a past property, and such a declaration involves committing the 'indexical fallacy'.¹⁷ To be sure, a persisting object now before our eyes had, in the past, different properties from those it bears now, though nothing now can have a past property. Given a point in time, a persisting object that has a great diversity of properties dated at various other times bears its intrinsic properties as indexed or anchored to that time only, and does not then possess any of its properties of (exclusively) other times. Thus, by such an argument, cohabitants cannot be shown to possess different intrinsic properties during the period of their overlap.

Michael Burke's view concerning the cases under discussion overcomes the problem of the multiplication of individuals in what appears to be a single physical body. His motto is 'one object to a place' (1994a, 1994b). Somewhat similar to the radicalism of the anti-essentialist who denies that, over and above portions of matter, there exist articulated substances with independent identity conditions, Burke declares that in cases of alleged cohabitation, the individuals claimed to be more than one are in fact identical with one another.

¹⁷ We say, for example, of an old man that he was young. We should mean by this that in the past this old man was young, and not that now as an old man he has the past property of being young. The fallacy involved in saying the latter is analogous to what Lowe (1987a) argues convincingly in application to events. Let us interpret events as occurrences of properties: 'it simply is not, *timelessly*, true to say that e is happening now in 1986, where e is a present event – said in 1987 this is simply false. Said in 1987, "e is *present* or is happening *now* in 1986" would imply (just as it does now, in 1986) "It is now 1986", and said in 1987 this last would, of course, be false . . . If e is a present event (i.e., is happening now in 1986), we should not say that it is a future event in 1985, but, at most, that in 1985 it was possible to express a true statement by means of the sentence "e will happen in 1986 / next year"' (p. 67).

Unlike the anti-essentialist, however, instead of using identity in denying the autonomy of articulated things, he says that the very same thing is (predicatively) both an articulated object and a constituent body. Thus in Burke's view, when we take a piece of copper which at a later time we cast in the form of a statue, the earlier piece of copper and the later one constituting the statue are not identical portions of matter (1994b, pp. 595–6). Since the later piece is also a statue, and since 'a mere piece of copper cannot *become* a statue', in spite of their continuity under the same sortal, the earlier and the later pieces of copper are not identical: a substantial change has taken place. Similarly, argues Burke, after the amputation of Dion's left foot, Theon ceased to exist. After the amputation, the torso (the part of Dion's body minus his left foot) is identical with the diminished Dion (1994a, pp. 134ff). The later torso is also a person.

I will not discuss the soundness of Burke's argument, which seems committed to the problematic assumption that some extrinsic changes may amount to destruction. Moreover I support him in his justified search for ontological economy. It is just that Burke's position has a highly undesirable consequence making it unacceptable to me. For the sake of consistency, Burke must violate Locke's principle that *one* thing cannot have *more than one* beginning of existence (1961, p. 274). Now let us ask: suppose we melt down the statue into an amorphous chunk of copper. The resulting piece will be identical neither with the statue, nor with this *later* piece of copper that was identified with that statue. As Burke admits, however,¹⁸ the piece of copper after the destruction of the statue will have to be identified with the piece before the statue, leaving a gap of existence in between. Analogously, supposing that Dion's foot was reattached to his body at a later time, the resulting torso would have to be identified with Theon, with an intermission of existence separating the two. In defence of his view, Burke points out that in an earlier publication he has shown how intermittent existence is not an objectionable thing after all.

I do not think that this defence succeeds. Even if we accepted Burke's reasons in his earlier publication, these would hardly justify his later commitment to intermittent existence. His earlier reasons

¹⁸ 1994b, p. 598, fn. 6. Suggesting that the later piece of copper is a brand new object, not identical with anything existing previously, would be counter-intuitive, implying for the world a lesser degree of permanence than what we are accustomed to seeing in it.

are advanced in a quite explicitly restricted manner, in order to make gaps in the careers of *articulated substances* tolerable.¹⁹ In contrast, the present case concerns purported situations of intermission in the careers of constituent bodies or of proper parts. Formal considerations will not capture the persistence conditions of bodies. Thus I have to reject both Burke's earlier argument against the non-identity of an object with its constituent, and his present argument for their identity. Since I believe in ontological economy, however, I will defend that non-identicals may share stages at which they are not distinct individuals. I will try to make it acceptable that in one individual substance more than one non-identical continuants may exist for a stretch of time. I will present this situation as a consequence of the Benign Doctrine of the Substratum, or, more specifically, of the fact that an articulated object is the result of a form inhering in a portion of matter that is said to constitute such an object.

4.2.2 *How are non-identicals indistinct?*

Where one object constitutes another we do not have distinct individuals. Whether it be obtained by casting or by the gradual replacement of material parts, a statue in copper is a single individual. Individual things are exactly as many as they are manifestly separate on the occasions we perceive them. Indeed, the copper statue's being a single individual will not make it identical with its constitutive matter, but such non-identity should not lead us into counting two individuals in what is manifestly one. On the other hand, the copper was an individual before it constituted the statue, and if for some reason the statue is destroyed, the piece surviving will regain individuality. Moreover, we would like to say that the piece of copper we had before the statue, and the surviving piece are *identical*. How can the two be identical if they are separated in time by a piece of copper that is not an individual? My view is that no problem is created by asserting diachronic identity here. Even though, as a constituent, the piece of

¹⁹ 1980, pp. 393, 404. Not many philosophers tolerate intermittent existence. For a rejection see Wiggins, 1980, p. 91. Two others who allow such a thing in one way or another are Coburn, 1971 and Scaltsas, 1981. It must be pointed out that where these philosophers offer reasons for rejecting or allowing intermittent existence, they have in mind articulated objects (artifacts, in particular).

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copper is devoid of an ontic status of individuality, it has not lessened in quality or in quantity. Throughout, it existed as a continuous and identical object.

My Aristotelian explanation of what happens to the piece of copper when it is set in the form of a statue: as a portion of constituent stuff, the ontic status of the piece of copper is restricted to being contributory to the objecthood of the statue. With the form, it is one of the principles the union of which is a substance (see Aristotle, *Metaphysics* vi, 3, 1029a3). In such circumstances, the statue is the only concrete individual existing there. The piece of copper underlies the statue as its benign substratum, and although it was an individual beforehand, now that it is an underlying piece of matter, it has *deferred* this status to the statue, to whose individual existence it contributes. I maintain that if something is the benign substratum of an articulated object, then it is an object without being an individual.

Some further clarification is in order here. First, my proposal does not make resort to relative identity. Just as I refuse to solve Chrysippus' puzzle, for example, by saying of Theon and Dion that they are the same individual man without being the same sum of parts, I refrain from saying that the two are non-identical objects while *they* are the *same* individual (or again, from saying that the statue and the copper are non-identical objects but the same individual). The reason is that the things which I claim to be two different objects are not, in my view, at the same time the same individual; only one of them is. Finally, my account does not appeal to the so-called breaks in the existence of objects. Deferring individuality is not going out of existence, and no object is thus destroyed. A constituent persists within what it constitutes, though it does not do so as a distinct concrete thing. But does my view not allow breaks in the existence of an individual which, as an object, continues without interruption, and is this not unnatural? I have not claimed that as an individual something has existence over and above its existence as an object. What matters for the diachronic identity of parcels of matter is their continuous existence, and not whether, in addition, they individuate.

When a portion of stuff acquires a set of new properties (a structure, for example), thus yielding a function which it is otherwise without, then according to the Aristotelian theory it is said to constitute a new

object marked by the function.²⁰ I have designated the portion of matter in this constitutive rôle as the 'benign substratum', and have refined it from the additional tasks the concept of substratum has been traditionally assigned, such as being a support of properties or an individuator. The view I propose here is that a benign substratum defers its status of individuality to the articulated object it constitutes, sharing with the latter all of its actual properties over the stretch of time this constitutive rôle continues for it. In many cases a benign substratum has the history of an individual,²¹ persists as a potential individual, and bears all the qualitative features of an object, including the additional set of properties that is responsible for its relegation to the status of substratum.

These ideas can be traced to their sources in Aristotle's philosophy. Two doctrines of this thinker are that a substance 'comes to be from the substratum',²² and that the substratum persists in the substance.²³ But how does a piece of matter persist in the articulated object it makes up? Is it identical with what it constitutes, or, if not, is it itself an individual existing along with the latter? Aristotle holds neither of these opinions. First he dismisses the thesis that 'the nature of the substance is identical with its immediate constituent'.²⁴ Then, in the *Metaphysics Zeta* he argues that the substratum cannot be an individual substance: 'that which underlies a thing primarily is thought to be in the truest sense its substance ... If we adopt this point of view, it follows that matter is substance. But this is impossible; for both separability and "thisness" are thought to belong chiefly to substance' (*Metaphysics*, vii, 3, 1029a, 1029a29). Aristotle lends individuality (or 'thisness') only to the object constituted, not to its constituent, and

²⁰ Aristotle says of the statue's bronze (or of the bed's wood) that it is 'that immediate constituent of [the substance] which taken by itself is without arrangement'. *Physics*, ii, 1 (193a10); the italics and the bracketed interpolation are mine.

²¹ Not in all cases, though: 'a case where the stuff constitutes the thing for all the time ... either the stuff or the thing exists: the plastic is synthesized right in the mold, so it no sooner exists at all than it constitutes the dishpan; and the dishpan is destroyed just when the plastic is incinerated': Lewis, 1986a, p. 252.

²² In the sense a statue comes to be from bronze. *Physics*, i, 7, (190a23 and 190b).

²³ *Physics*, i, 9 (192a30), and also ii, 2 (194b24), i, 7 (190a23) where Aristotle says that the bronze 'survives' in the statue.

²⁴ *Physics*, ii, 3 (193a9). Elsewhere Aristotle says that 'in all instances of coming to be matter is inseparable, being numerically identical and one with the "containing" body, though isolable from it by definition'. (*On Generation and Corruption*, i, 5). The apparently contradictory character of these remarks is dispelled when, following my suggestion, we read the expression 'numerically identical' as 'numerically indistinct'.

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hence the substratum is only a potential individual, as long as it contributes to the existence of the substance it underlies: 'Sensible substances have all matter ... and by matter I mean that which not being a "this" actually, is potentially a "this" ... the complex of [matter and form] which alone is generated and destroyed ... is, without qualification, capable of separate existence' (*Metaphysics*, viii, 1, 1042a25. Words in brackets my interpolations). Thus in Aristotle's own framework what I mean by 'deferring individuality' is expressible as receding into the state of being a potential individual. It seems that another reason for which Aristotle cannot let matter persist *as an individual*, and thus cannot allow the cohabitation of individuals, is that for him the substratum is the principle of individuation. There being just one piece of stuff constituting the object entails that only one individual exists there (*Metaphysics*, vii, 8, 1034a5), and, granting that substance is the compound of matter and form, matter itself cannot be an individual.

In this chapter we have examined the relation between an articulated object and the piece of matter that constitutes it. Developing one of the aspects of the Benign Doctrine, I have offered reasons for disentangling the concept of identity from that of individuality. The discussion of material bodies and articulated objects will continue in the next chapter, but the main concern there will be the persistence conditions of such entities. The chapter will begin, however, with a broader inquiry into change.

5

Change, matter and identity

5.1 PROBLEMS OF CHANGE AND PERSISTENCE

If everything, without exception, changed completely all the time; if, as Heraclitus believed, everything was in a perpetual flux, there would be no knowledge of the world. Without any permanence even the flux itself could not be conceived as change; there would be nothing in the flux to which we could attribute the differences as changes. We could not even begin to describe such a place: conditions would have become totally different before we could put any description into words. In a Heraclitean universe, science is no more possible than in a Parmenidean universe of complete rest and homogeneity. For there to be a consistent understanding of physical reality there must be, as Aristotle said, some permanence as well as change. We must recognize as facts of nature both that everything changes and that this happens not to every aspect at the same time and at the same rate, but that it occurs in what remains relatively permanent. Losses and gains of certain features occur in things that persist identically over stretches of time. Things move from place to place and besides, as Aristotle also pointed out, they undergo three other types of change. They change in quantity, alter in their qualities, and are destroyed or come into being. Except for the last type of change, an object remains identical with itself while its attributes or aspects change. In the last type, along with its qualities, the object itself is changed into a different thing. If change is the loss of something (such as a position, a property, etc.) it is also, and almost always, the gain of something new, of the same category as what is lost. The losing of one quality is the gaining of another. In a parallel way, the destruction of one object is the generation of another. Nothing whatsoever is lost completely. Aristotle claims that just as the object itself remains permanent while altering in its

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qualities, what persists in the destruction or generation of an object is the matter or substratum (see *Physics*, i, 5–9; *On Generation and Corruption*, i, 3–5; *Metaphysics* vii, 8; xii, 3). It is just this idea that the Benign Doctrine of the Substratum is, at least partly, meant to capture.

Objects do not suffer change at the same rate and over the same stretch of time. Often, however, change may be to such an extent that many things said to remain identical may become unrecognizable when their different states at different points in time are compared. The question then arises as to what it is for something to remain identical through time. The study of this question is the study of alteration, the mere qualitative change of objects. But since the limit of alteration is outright destruction, that is, a ‘substantial change’, the study of the altering thing is, at least to a degree, also a study of the circumstances under which this thing is destroyed.

5.1.1 Five accounts of change

Aristotle’s considerations do indeed specify certain conditions crucial to change, as well as providing a plausible classification of its types. They do not address, however, two seemingly more fundamental problems concerning change. First, how does a difference in properties existing in the same object qualify as change, rather than as a mere difference; and second, why is such an object not seen as something possessing contradictory properties (i.e., how is a difference a change and not a contradiction)? Aristotle simply assumes that if the same substance bears, in temporal succession, a property and its contrary (i.e., one that is incompatible with it) at the same relative position, then such a thing is a case of alteration. Let us consider a green pepper turning red. Even if we grant that green and red are incompatible properties, ordinarily we follow Aristotle in assuming that such a difference is not a contradiction, for the pepper has these properties at consecutive times. But this otherwise sensible account overlooks the issues raised above.

The former of the two problems was explicitly stated first by J. E. McTaggart. This philosopher has asked why a difference in properties along the temporal dimension is a change and not just a difference, as such a thing would be along the spatial dimensions. We may suppose, for example, that at a point in time the pepper is

red at one end and green at the other, and this difference will not qualify as change. A difference in the spatial parts of the pepper is not a change, for spatial differences do not count as change even if they inhere in the same substance. But why should a *temporal* difference inhering in the same substance be a change? (see McTaggart, 1968, pp. 89, 92). The obvious answer that suggests itself is that spatial differences do not qualify as 'spatial changes' for they coexist. Saying this, however, simply hinges on our having defined time as a dimension in which differences do not coexist, in spite of the fact that, just like the pepper's turning red, moving one's finger from the green extremity to the red takes up time. Given space and time we treat as change differences in the latter only, because we presume that the two are ontically different and that the latter is a dimension of change (see Mellor, 1981, pp. 89–91). To block the potential circularity here one needs a plausible ontology of time, but such a pursuit is beyond the aims of the present work. Thus here I shall simply assume that differences in the same substance through time are changes. Anyway, in the present context I am more interested in the latter of the two questions I have posed above: why do incompatible properties in the very same spatial part of a substance not make a contradiction when they occur in a temporal succession?¹

There are at least five ways of answering such a question,² and these determine at least two different conceptions of objecthood through time. Let me begin by introducing these conceptions, and the associated terminology. Their difference will gain greater significance as we go on considering the various aspects of the solutions proposed in response to the question above. First, a neutral notion: if an object exists through time we say that it 'persists' or 'continues', and designate it as a 'continuant'. The two concepts to be introduced are rival characterizations of a continuant from the point of view of the manner of its persistence at different times. David Lewis specifies this manner (1986a, p. 202; see also 1983, p. 59) as 'perduring'; if a continuant is regarded as a four-dimensional object, that is, the sum of object-stages present at every consecutive point in time (every 'temporal part'), this continuant is

¹ For a succinct expression of the problem see Johnston, 1987, pp. 113–14.

² We owe the explicit formulation of this question to Lewis, 1986a, pp. 202 ff. See also Lowe, 1987b, 1988a, pp. 68–74 and 1988b, and Haslanger, 1989.

said to exist: 'Something perdures iff it persists by having different temporal parts, or stages, at different times, though no one part of it is wholly present at more than one time' (1986, p. 202; see also 1983, p. 59). A continuant will be said to 'endure', on the other hand, if its persistence is such that it is wholly present at every point of time that falls within the period of its existence. Thus while according to the latter at *points* of time we have the whole object, according to the former we only have a part of it.

The first solution offered in response to the second question concerning change is that what we regard as intrinsic properties of things,³ that is, attributes such as shape, hardness, colour, and so on, are not intrinsic in fact. They are 'disguised relations' things bear to times. One and the same pepper may be green at certain times in the sense of the pepper standing in the green-at relation to these times and be red in an analogous sense at other times, just as one and the same arm may be straight shape and bent shape at different times, i.e., the arm may stand in the straight-at relation to some of these times, and in the bent-at relation to some others, without creating a contradiction. There seems to be agreement amongst philosophers that this first solution won't do, because it amounts to a denial that objects bear intrinsic properties (see Noonan, 1989, p. 124). It disallows properties that an object can be said to possess in virtue of what it is, and independently of anything else. I will not consider this position any further.

A second solution involves propounding that only the present is real. To be sure, the latter doctrine concerning the nature of time has a venerable ancestry comprising thinkers such as Augustine and Broad. (Augustine, 1966, pp. 259–77; Broad, 1938, pp. 271, 277. See also Prior, 1968, and Chisholm, 1981.) It removes the worry that incompatible differences might present contradictions, for on such a view in reality there are no differences that are spread over time. Since according to this conception only one time is real, it follows that only one term of what would be a temporal difference is real, and hence no two real incompatibles are attributed to the same entity. Those who reject this solution do so mainly on the grounds that it infringes on common sense by reducing the past and

³ 'We distinguish *intrinsic* properties, which things have in virtue of the way they themselves are, from *extrinsic* properties, which they have in virtue of their relations or lack of relations to other things.' Lewis, 1986a, p. 61.

the future to unreality, and moreover that it rules out the continuing existence of objects (see Lewis, 1986a, p. 204). I am not quite convinced that any of this follows. First, the thesis of temporal becoming may find itself a basis in commonsense empiricism, for human sensation and consciousness have access to the present only. Furthermore, narrowing down real existence to the present does not entail rejecting persistence. As Mark Johnston points out, a philosopher advocating such a view 'may say that a presently existing object also did exist and will exist' (1987, p. 114). It seems impossible, however, to fit four-dimensional perdurers in such a temporally narrow reality (see Oaklander, 1992). But for many this is not a disastrous consequence at all. I resist adopting the second solution, because it depends on a controversial ontology of time.

The third solution explains the temporary intrinsic properties of middle-size objects in term of the various arrangements of the micro entities that are said to constitute them. No property is actually lost and gained here, since the micro entities are endowed with permanent properties (Lowe, 1987b, pp. 153–4). This is a contemporary and sophisticated version of ancient Atomism. It makes the changeable intrinsic properties of the object supervene on and derive from the unchanging properties of, and the relations between, particles composing this object. In this solution we have something analogous to the idea of 'apparent change' (as opposed to the absolute change of the underlying reality) found both in post-Parmenidean pluralism and in Leibniz' (well-founded) phenomenalism. Moreover, it is a thesis well-buttressed by the prevalent scientific theory. As David Lewis points out, however, there are two shortcomings of such an approach. (Lewis, 1988. I do not mention here every point raised by Lewis.) First it should be at least *possible* that the intrinsic properties of micro-particles might themselves change. But if so, the very same problem the third solution tries to settle will crop up at the micro-scale, conceived thus far as absolute. Relativizing the micro-scale by invoking yet smaller constituents will have the result of introducing a regress. The second objection is more important: even if there is a plausible atomistic account of the temporary properties of middle-size objects, which makes such attributes 'apparent' or supervenient on the properties of the constituents, this does not dissolve the need to account for the fact that middle-size objects

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have incompatible 'apparent' properties at different times. Surely, 'apparent' here could not be understood as 'unreal', and thus, whatever its background may be, one still needs an explanation of apparent change without having to treat this as a contradiction at the manifest level. Merely explaining that these are constructs out of more basic things will not solve the problem of how, even as constructs, incompatible pairs of these inhere in the same thing without bringing about a contradiction. Even a composite entity should bear its (apparent) properties consistently, and philosophy owes us an explanation of how such consistency gets secured. Moreover, where do we draw a line at reductionism? Do we not maintain that bodies and articulated objects are not just the sums of their constitutive particles? (Cf. Doepke, 1982, pp. 57ff.; Lowe, 1989, pp. 84ff.)

The fourth solution relies on the thesis that objects instantiate properties at particular dates, i.e., that possession of a property is temporally qualified. Unlike the first solution according to which an object is said to have a 'property-at-a-time', on the fourth, the relation of the object to its property is that it 'has-it-at-a-time'. The fourth solution does not turn intrinsic properties into relations; according to this view properties get dated and hence anchored to specific times, because their instantiation or possession by substances is temporally qualified (Johnston, 1987, pp. 128–9, Lowe, 1988b, pp. 73 ff., and Haslanger, 1989). That the possession of properties is temporally qualified seems to be a necessary condition of concreteness, just as spatial qualification is. I think this idea captures an important truth. But I also believe that the dated possession of properties is not, as such, inconsistent with the concept of an object-stage. Interpreted as a 'temporal part', the latter notion is central to the fifth solution, which I will introduce next. (The completion of the summary of the fourth solution will have to wait until later.)

The fifth solution blocks the contradiction by attributing the incompatible properties to 'object-stages' which differ (at least) temporally. This is also called the doctrine of temporal parts, for in addition it regards object-stages as the temporal slices of four-dimensional entities. The latter are said to have stages as their temporal parts, analogously to the way in which they have their spatial parts. As Johnston argues, an important disadvantage of this account is that by its very nature it cannot declare any of the successive stages of the

same object identical, even if the latter remains totally unchanged.⁴ The suggestion that every temporal slice is different is simply *the* way in which the temporal parts doctrine is capable of explaining away contradiction in change. Temporal parts are not identical with one another, for parts of a whole must be different to be the *parts* they are. Johnston's point is that precisely because of this feature of the theory it becomes impossible to defend the diachronic identity of consecutive stages which do not undergo any change. Furthermore, even the parts of consecutive stages that remain without difference may not accordingly be deemed identical. An example is provided by the Dion-Theon case. I have discussed in 4.1.1 that severing Dion's foot made no intrinsic change in Theon.

All of Theon's parts remain intact. Yet applying the doctrine of temporal parts and distinguishing Theon-before-the-mutilation and Theon-after-the-mutilation we get the result that no particular part of the reality which before the mutilation made up Theon remains after the mutilation. The previous particulars which made up Theon ... have passed away and brought into being a temporal part with no particular parts in common with the previous temporal part. (Johnston, 1987, p. 122)

Graeme Forbes has attempted to rebut this by 'pointing out that if "Theon" is used as a name of persistents (not stages of persistents) then one can correctly say that Theon exists now and also existed before the mutilation and underwent no change in make-up ... So some substantial part of reality did remain after the mutilation' (1987, p. 143). Surely, though, the response does not answer the criticism. The four-dimensional entity, that is, the perdurer, is of course identical with itself; but no slice of it can be said to remain identical so as to overlap with the next, even if they are continuous and share every one of their properties. Thinking of the limit, then, it would appear that the doctrine of temporal parts is after all committed to the conception of a four-dimensional object, which is the mereological sum of flickering instantaneous slices.⁵

⁴ This consequence is analogous to treating momentary stages as compresences of events (see 2.1.2), but the underlying reasons are different.

⁵ *Pace* Forbes, 1987, p. 143, who says that 'the temporal part theorist's view should be sharply distinguished from the empirical way that objects instantaneously flicker'. The consequence comes not only from the empirical component of the theory, but also from its very statement.

Object and property

Some further refinement may be required here. Accordingly, two different views, a sixth along with the fifth, will emerge, one being the 'part-to-whole', and the other the 'whole-to-part' version of the temporal parts doctrine.⁶ The solution explained at the outset of the previous paragraph takes temporal slices (object-stages) as subjects to which differences are attributed. Since these differ from one another their mutual relation cannot be identity. Instead they may be regarded as being linked by a different relation, namely 'genidentity', which holds between momentary objects that are parts of a single continuing whole.⁷ This does not exhaust, however, possible depictions of the situation from the point of view of a four-dimensional account. The alternative is to take the subject of differences to be a single entity, namely the temporally elongated whole object. Contradiction will not arise if incompatible properties are attributed to it at its different specific temporal parts. Just as one may say in the context of space that the Thames is broad in London and *mean* by this that the London part of the Thames is broad, one may say with regard to the temporal dimension that Hume wore a wig in old age, and *mean* that Hume had a later part that bore this property. According to the whole-to-part version, therefore, one is referring to the whole, and ascribing to it the property of having a 'wig-wearing' (or broad) part.⁸ We cannot thus conclude that the four-dimensional object undergoes change, however. The case is that such an object has different (temporal) parts with incompatible properties. Moreover, it must be that each of its parts is different, committing the account to what is sometimes called 'sub-regions of zero temporal extent'.⁹ Hence Johnston's objection stands, after all. But are we not, in all this, distorting the meaning of 'object-stage' somewhat? Do we not understand by this at least two quite different things which we conflate as a matter of course?

What is an object-stage? One of the best characterizations has been

⁶ See van Inwagen, 1990, pp. 246–7 for an analogous distinction. His Theory 1 corresponds with what I denominate as the part-to-whole version, while Theory 2 is his counterpart of my whole-to-part version. See also Simons, 1991, for other options.

⁷ See Carnap, 1967. Russell's position, too, may be viewed as 'part-to-whole'.

⁸ The Thames example is from Lowe, 1988b, p. 75, and its reinterpretation is made along the lines of van Inwagen, 1990, p. 247. It is likely that Lowe will regard this as a distortion that blinds the example to the difference between the fourth and the fifth solutions.

⁹ van Inwagen, 1990, p. 246. In the same article van Inwagen argues that temporal parts have their extents essentially.

supplied by David Lewis. According to him an object-stage (more specifically a person-stage) is

a physical object, just as a person is . . . It does many of the same things that a person does: it talks and walks and thinks, it has beliefs and desires, it has a size and shape and location. It even has a temporal duration. But only a brief one, for it does not last long . . . It begins to exist abruptly, and it abruptly ceases to exist soon after. Hence a stage cannot do everything that a person can do, for it cannot do those things that a person does over a longish interval. (1983, p. 76)

With this characterization at hand, we may detach the notion of an object-stage from the claim that it is a *part* of a temporally elongated thing having ontological priority over it. We can envisage a stage as the object's condition over a short duration, long enough to allow ordinary empirical acquaintance. Now given that on such a notion an object-stage is itself qualified temporally, it will be readily acceptable to say that it possesses its properties in a temporally qualified way. In fact, if, as I do, one regards an object as a compresence of properties, this seems to follow naturally. My thesis is that once we distinguish between stages simpliciter and parts of four-dimensional worms, the former emerge as entities consistent with the fourth solution.

5.1.2 Endurers with stages

The notion of an object-stage has been attacked, among others, by philosophers who defend the fourth solution. Jonathan Lowe, for example, rejects 'stages' for three reasons. First, he thinks that they imply four-dimensional entities of which they are parts (and moreover that four-dimensional entities, in their turn, possibly yield an ontology of time that assumes the block-universe view) (1989, p. 134; see also Oaklander, 1992. Cf. Noonan, 1988b, pp. 83ff. and 1989, pp. 108ff.). Second, the notion of object-stages involves 'the quite gratuitous invocation of a category of entities hitherto unknown to layman and scientist alike' (Lowe, 1988b, p. 77), and what is more, it is hardly intelligible and metaphysically extravagant.¹⁰ Third, this is a circular notion. The individuation and identification of such stages will not be

¹⁰ 1987a, p. 152; 1989, p. 134. A number of philosophers have argued that in addition to being unintelligible, the notion of temporal parts is incoherent as well. See Geach, 1972, pp. 309–10; Chisholm, 1976, appendix A, and van Inwagen, 1981, pp. 133–5.

possible without appeal to the four-dimensional wholes of which they are parts, and thus an account of the whole object in terms of its parts will beg the question.¹¹

I think that if we take these charges to apply to stages without conceiving them also as parts, much of the force of the criticism is lost. As I have discussed above, an object-stage is not necessarily a temporal part;¹² it may simply be the object of one's acquaintance over a period of time (as opposed to other times). But in this latter sense no four-dimensional entity is entailed. It goes without saying, on the other hand, that temporal parts do imply four-dimensional things as their aggregates, but as I have said already, this is not a view I am interested in promoting. A similar point can be made in connection with Lowe's third objection, which diagnoses a circularity: even though this defect may vitiate the temporal parts account, it does not thereby affect object-stages simpliciter, especially if at one's disposal there is a satisfactory explanation of how temporally qualified stages relate to the entire career of the object. If the explanation of the persistence of something that bears different properties at its different temporal stages can be developed in a plausible way, ontic commitment to four-dimensional objects will be avoided, and hence 'perdurers' will not take part in the explanatory elements of the ontology. All this also explains why the interchangeable use of 'object-stage' and 'temporal part' is inadequate. I grant that there is metaphysical extravagance and some awkwardness in the doctrine of temporal parts; it flouts common sense. But this is because it introduces four-dimensional wholes as concrete entities, not because it recognizes object-stages. I quite agree that in the declaration 'A river is a process through time, and river stages are its momentary parts',¹³ there is something repugnant to our common sense, for our ordinary conception of an object is neither of some process nor of some momentary entity. It is different, however, with the idea of an object-stage. I think that understood purely in the way Lewis' description depicts it, and excluding its parthood in the

¹¹ Lowe, 1988a, pp. 68–71; 1989, p. 134. For a similar but less explicit comment see Johnston, 1987, p. 110.

¹² The converse holds true, however: a temporal part is always an object-stage.

¹³ Quine, 1961, p. 65. It is interesting to note that even Noonan, who finds Quine's ontology of objects 'wholly compelling', abstains from lending support to 'the idea that everyday things like ships and people are "four-dimensional worms", with temporal as well as spatial parts' (1988b, p. 83; 1989, p. 108).

temporal dimension, the latter does correspond with our ordinary notion of an object, and like the latter its foundation is empirical.

For the same reason, I find difficult to accept the criticism that object-stages are unintelligible. Our empirical observation of an object lasts for a limited duration, and thus involves the intrinsic properties the object bears at such a stage in time. Our acquaintance with a three-dimensional substance is of a thing that manifests itself empirically, and since objects change and may manifest themselves quite differently at different times, our ordinary notions of entities are as they are at given times. The object as we know or remember it from a certain date is the epistemic counterpart of an object-stage, and such a thing seems rather familiar. We speak of knowing or describing someone as a child, as a young man, as an old person. Thus ordinarily we contemplate entities such as 'Wittgenstein as a young man', or 'The Oxford of the seventies'. We say of a darkened and half-eroded gargoyle that several centuries ago it had sharply defined traits and that it shone brightly in the sun. Granting that properties are temporally qualified and that objects bear remarkably different qualities at different dates, since perception is of an object's sensible qualities over a limited period of time, our empirical conception of a three-dimensional object lasting through time is very akin to that of an object-stage. Frequently, it requires some effort to recognize that some manifestly different conceptions are of the same thing, and the way to do this is to think of these conceptions as those of the different stages of the same entity.

The charge that the conception of an object-stage is incomprehensible is rarely made. But an idea held widely among philosophers is that our commonsense notion of an object is that of a continuant and not of a stage (see for example Brennan, 1988, p. 136). In one sense this is no doubt true. The commonsense three-dimensional objects we observe are not at all 'momentary', and the familiar empirical fact is that they continue to exist at least as long as we keep on perceiving them. But this fact will not make commonsense the belief that the entities of everyday life are continuants in the sense of things persisting through an entire career from beginning till end, through which change may inflict upon them a remarkable amount of difference, often rendering them unrecognizable. I believe that such a *full-length* continuant, which is almost never available to the senses, is quite foreign to common sense. Moreover,

disregarding its additional character of being intended as a temporal part, Lewis' description of an object-stage is that of a continuant, in as much as objects we encounter ordinarily last throughout our experience of them. Such stages are not restricted to momentary slices; they are however objects that persist for a much shorter period than their complete life histories. Admittedly, the concept of a temporal part may be committed to that of a momentary stage. But once we deny that stages are parts no such implication remains. Object-slices of common sense last for periods such as that of the duration of a glance or of the length of a dinner. They are, however, full-length empirical entities and do not require the extrapolation needed for envisioning a whole continuant. It seems rather groundless to treat object-slices as 'theoretical entities' where the latter notion includes unobservables.¹⁴

Once a plausible concept of object-stage is distinguished from temporal parts and hence possibly from momentary slices, objections debasing the latter become inapplicable to the former. Let us think of extrapolating a full-length object-career out of an object-stage, where such a career is not necessarily conceived as a whole made of object-stage parts. Suppose we know a famous philosopher, now an old man, and contemplate his entire life history. Doing such a thing is quite different from what some philosophers refer to as 'the fundamental epistemological problem about persistence', that is, the problem of how, out of a momentary distribution of properties in space and time we infer the existence of, or logically construct, persisting objects (Johnston, 1987, pp. 108–9, and 130 ff.). Maintaining the existence and empirical primacy of stages does not commit one to constructing 'persisting objects ... out of distributions of qualities or the inferred causes of such distributions'. One may easily agree with Johnston that we make our 'perceptual judgments of persistence ... spontaneously and non-collusively ... on the basis of perceptual experience' (Johnston, 1987, p. 132). Ordinarily, such judgments will be about object-stages lasting for relatively much shorter periods than the full temporal span of an object. Thus appeal to the tenet that we do not infer objects from the experience of qualities is not a criticism of the extrapolation I have mentioned above. The object-stage should not be envisaged in contrast with persistence, and hence the contrast

¹⁴ Brennan, 1988, p. 137. But two pages later Brennan acknowledges that stages are empirically observable.

between stages and continuants should not be construed as one between flickering and persisting entities.

The dispute over whether a temporal part belongs to the same kind as the perdurer of which it is a part (see Noonan, 1985c, 1987 for a positive argument) does not concern the present approach directly, for I do believe that I have disentangled the concept of an object-stage from that of a temporal part. But such a dispute raises a question of crucial interest to me when it begins inquiring into whether it is appropriate at all to treat stages as objects falling within sorts. Andrew Brennan, for example, considers a case in which one gets acquainted with merely a two-hour portion of the career of an object. Is one not acquainted, in such a case, with an object of a specific sort? (1988a, p. 139. Brennan borrows the example from Schlesinger, 1985.) This seems to me to be the usual way in which we meet and get to know most objects. Only with a limited number of things do we have a more prolonged encounter, and it is very seldom indeed that we observe the entire career of an object.

Brennan thinks, however, that meeting a two-hour slice of a much longer continuant of the kind F cannot be regarded with certainty as meeting an object of the kind F. Supposing that the type of object in question is a person, it may turn out that what one had met was a person-like entity who had begun to exist immediately before the meeting and had popped out of existence right after leaving. Brennan begins his argument by quoting Schlesinger: 'our experiences with him during the two hours of his visit would be absolutely indiscernible from what they would be if we had visiting us but a very small temporal part of a person with a life span of ninety-five years'. He then declares that we cannot regard a two-hour F-looking thing as an F, simply on the basis of indiscernibility. According to him 'we need more than experiential evidence'. At any rate, 'if the two-hour Fred is the *entire* life of a particular which is unrelated by survival relations to any other particulars, then it is hard to see why the Schlesingers think they have a *person* as their dinner guest after all' (Brennan, 1988, p. 141). To be sure, there are no two-hour persons. Brennan's point rests on the argument that if we deem the two-hour slice of a person to be a person, given the possibility that we may be fooled by the bizarre case of a two-hour person-like entity which is *not* really a person, it is unfounded to

ascribe personhood to the former. Brennan advances that such reasoning 'arm[s] us with the interesting information that it is at least not obvious that Fred is a person' (1988, p. 142). Hence, to generalize, ascribing F-ness to entities which we encounter for brief periods is dubious, if not unjustified, even though such entities may be indiscernible from actual Fs manifesting themselves during the same period.

I contend that this is making too much of skepticism. There exists, no doubt, a remote possibility of being deceived because one is under the highly strange type of circumstances described. But the issue does not concern whether or not we can have knowledge that an F-looking entity is in fact an F. For all we know, it is possible that we may be brains in vats being given the impression of a full-length person – let alone a two-hour person-slice. For my part, I believe that to refrain from treating people we encounter only briefly as genuine persons would be neither rational nor ethical! This would entail doubting that most of the people one meets in an urban society are persons. What minimal length of time would be acceptable to Brennan? Would this not lead to a Sorites-type paradox? Moreover, if any slice is shorter than the whole career, is this view not committed to treating some entity as a person only if her complete life-span has been observed, and that consequently the person has already become deceased? Brennan's point strikes us as much less convincing when applied to objects other than persons and living entities. The reason is that there *may* be two-hour long tables, pencils, cars or even chunks of bronze. Finally, our concepts of full continuants are, for the most part, extrapolated from shorter slices. Based on certain generalities we assume that entities we meet briefly have a longer existence through time. I dare say that it is rather full-continuants that are 'theoretical entities'.

Thus far, I have suppressed the exposition of the fourth solution apart from reporting its claim that objects possess their properties in a temporally indexed manner. Crucial to such an account is, however, a thesis about the nature of the continuant that instantiates the properties. Accordingly, what bears different properties *at different dates* is a *numerically identical* object. In sharp contrast with this the fifth solution assigns *different* temporal parts to different dates, as bearers of properties. As I have pointed out in 5.1.1 'endurers' are envisaged as entities that remain the same at every stage throughout their career. Therefore

something '*endures* iff it persists by being wholly present at more than one time' (Lewis, 1986a, p. 202). Viewing the persistence of an object as an enduring thing, on the other hand, is a common aspect of the first and the fourth solutions. I have explained already that Lewis has objected to the first on the grounds that it reduces intrinsic properties to extrinsic relations. Clearly, such an objection will not affect the fourth solution. But, although stated less explicitly, Lewis has another argument that affects both solutions alike (1986a, p. 210; 1988, pp. 66–7; see also Haslanger, 1989, p. 123). According to this argument, independently of whether properties are interpreted as relations to times, if the very same endurer is said to bear different properties at different times, then such properties cannot be intrinsic to the endurer. The idea is further emphasized when we think of the endurer as being 'wholly present' at different times (see Mellor, 1981, p. 111). If at t_1 x is wholly present and has the property F , and at t_2 again the wholly present x has the property G , then these properties are not intrinsic in the sense of constituting the whole presence of x , and the point can be extended to every other property of an endurer. It seems, then, that a theory that assumes an endurer assumes thereby that an object is a substratum which bears its properties extrinsically at different times (see Haslanger, 1989, pp. 123, 124). I think an incidental note is needed here concerning the distinction between intrinsic and extrinsic properties. The above argument does not establish that an endurer's properties are extrinsic, in the sense of possessing such properties dependently upon something else, as in my becoming an uncle because my sister bears a child. The argument does not show that an endurer's properties are possessed in virtue of a relation to something else, nor need there even be such an entity. In my view what it shows is that the temporary properties of an endurer are not constitutive of its nature, nor integral to it, and only in a less technical sense than that of Lewis can properties be said to fail to be 'intrinsic'.

Imagine you return to a certain place after twenty years and find a huge tree in the place of the sapling that was planted soon before you left. The qualitative difference between what is seen and what is remembered is immense. If one declares that this tree is identical with the sapling planted then, and that the tree was then and is now wholly present, then the entire qualitative bundle (including the properties of the young tree, no longer present, and those of

the mature tree, which were not then present) gets excluded from the so-called 'wholly present' tree. The enduring tree is reduced to what is said to remain in it, that is, what persists in its nature, making it the thing it is all through its existence. If one adopts a qualitative essentialism, then such an essence, made up of the qualities that are *common* to the sapling and the mature tree, is the wholly present tree, bearing its multifarious accidents through time. But we cannot assume that essentialism itself is a necessarily true doctrine. Thus it is possible that objects have no qualitative essences. If they do not, that is, if the tree twenty years ago and the tree now have no common persisting qualitative nature, then the endurer alleged to be wholly present at both dates is a *bare particular*. Unless qualified appropriately, the endurer theory leaves the way open to the doctrine of the mysterious substratum. Surely, though, we are not to conclude from this that it is incompatible with the bundle view, for endurers do not have to embody non-qualitative substrata. I submit that by combining the endurer theory with a qualitative essentialism we can obtain a very plausible view of objecthood through time. In other words, Lewis' argument can be forestalled on behalf of the endurer theory by embracing essentialism.

A plausible version of the endurer theory is obtained by combining it with the essentialist thesis that certain properties of an object are retained throughout its career, their loss entailing its destruction. Such essential properties are indeed intrinsic, making up the object's particular essential nature. Lewis' argument can be blocked as follows: accidental properties can be intrinsic,¹⁵ for 'intrinsic' does not mean 'making up part of the nature of the object'. An attribute possessed by the object over a period of time shorter than its entire life history can be intrinsic, if it is borne at those times independently of entities and conditions other than the object itself (see Haslanger, 1989, pp. 123–4). In other words, accidental properties are those that may be borne in virtue of the way the object is, without contributing however to the very nature of this 'way'. Thus, an intrinsic property may or may not be essential.

On this essentialist account of endurers, an object at a given time is said to be made of a compresence of intrinsic properties, a sub-

¹⁵ For an explicit acknowledgement of this possibility, see Lewis, 1986a, pp. 199, 242, 243.

comprepresence of which is retained in all of its earlier and later (spatiotemporally continuous) stages.¹⁶ If the object is viewed, however, as what endures, then for reasons discussed already, the majority of its intrinsic qualities cannot be included in it. In order to be able to treat accidental qualities as intrinsic, we need to identify the endurer with the object's particular essence, and not with the (whole) object itself. Since according to this prescription the endurer will be the sub-comprepresence of properties that are borne by the object as long as it exists, then accidental intrinsics will form the rest of the object's properties: they will form what remains of the complete comprepresence without the sub-comprepresence of permanent properties. Then, on this account, a property's being left out of the endurer will not mean that it is left out of the object. Thus if accidental intrinsic properties are to be allowed we cannot declare that the object is wholly present at different points in time; rather than the object, it is the essence or particular nature of it that is wholly present. At a point in time, an object comprises much more than its essential nature, and such inclusion may differ drastically from one time to another. This is why we speak of different object-stages that exist at different times without this entailing the entification of *perdurants*.^{17 18}

5.1.3 *In defence of object-stages*

A possible objection to the view I have just advanced may be that it involves a redundancy, with the undesirable effect of multiplying the

¹⁶ The present suggestion corresponds to the modification of the bundle theory, proposed by van Cleve, 1985, p. 99, in order to block its commitment to essentialism. It will be seen that the consequences he foresees do not follow in the present account. I disagree with Casullo, 1988, pp. 127 ff., who implies that a satisfactory bundle view must embrace the temporal parts doctrine. Cf. Castaneda, 1977. Also, van Cleve's objection that bundles are incapable of change while remaining the same (pp. 96, 98) is answered in the present section: the stages of an object are non-identical but the endurer that bears these accidents is identical through time.

¹⁷ Baxter, 1989, p. 131, acknowledges this, and explains how the *same* object is *different* at different times. I would say that *stages* are not indiscernible, but that they are not identical either. The tree of twenty years ago is not the same as the tree of today, but the two are the same tree in the sense of being the different stages of the same endurer. Hence, as Baxter notes, 'Pittsburgh as it was in 1946 does not exist today. And Pittsburgh as it was in 1946 was Pittsburgh. But it does not follow that Pittsburgh does not exist today' (p. 130).

¹⁸ Although the route by which it is attained is somewhat different, my account corresponds with what Johnston, 1987, p. 123, calls 'the partial endurance view'.

categories of the ontology: once endurers and their dated properties are acknowledged, it becomes totally superfluous to include the so-called object-stages in addition to them. Endurers with dated properties explain everything that needs explaining about objects and also avoid the implausible tenet that at different dates spatiotemporally continuous objects have stages that are mutually non-identical. In fact, once one thinks of an object as a spatiotemporal continuity of such stages, one seems to be committed to affirming that since there is change (since different stages of the same continuant contain different properties) Leibniz' Law becomes irrelevant to, and inapplicable within, the account of identity through time. Surely, however, to see that this consequence is spurious all one needs to do is to employ one's tenses properly. Given two dates from the life history of a certain continuant, it is natural that the continuant has different properties at such dates. It is not legitimate, however, to suppose on this basis that at those dates we have qualitatively different object-stages. To illustrate the point, suppose that at an earlier date we have a boy with thick curly hair, and at a later date a bald old man with a beard, and that the two are spatiotemporally continuous. We should not judge this case as one involving two stages with different properties, for the correct way to deal with dated property differences is as follows: at the earlier date the old man was young and had thick curly hair, and the boy of that earlier date will become a bald man and grow a beard at a later date. The past of the old man is identical with the boy, and the two are indiscernible. Similarly, the future of the boy is identical with the old man, and, again, the two are indiscernible (see Brody, 1980, pp. 21–2, Wiggins, 1980, p. 24). Thus reference and commitment to object-stages disappear. I must say that I am unable to regard this argument as admissible, and believe that the need to recognize object-stages has not been eliminated thereby. Below I will review the steps of this reasoning.

The stage theorist proclaims that at a point in time the *manifest* object, i.e., the three-dimensional substance, is above all an object-stage. As a matter of fact, in any two stages in the life history of an ordinary continuant there will be several incompatible properties. Precisely this is what we comprehend as change. If an object is (maybe among other things) the compresence of its intrinsic properties, the two bundles that make it up at two different points in time cannot be the same in content, and therefore by Leibniz' Law the two

stages, i.e., bundles, cannot be identical. (Or alternatively, if we prefer to say that they are identical, then Leibniz' Law is inapplicable through time.) In response, the opponent of the stage theory points out that a properly tensed description of the case does observe Leibniz' Law, and thus no support is left for proclaiming the existence of different stages in the same continuant object: at an earlier date the object had properties incompatible with those it has at a later date, and at that earlier date it was going to have properties incompatible with those it then had. I think that in one sense this is a perfectly sound point and shows successfully that Leibniz' Law applies equally well through time. One cannot infer from this, however, that at specific dates there are no mutually non-identical object-stages of continuants that persist through these dates.

Once more I reiterate that properties inhere in substances in a temporally qualified way and that, because of this, particular properties are dated (that they are indexed or anchored to particular times). At two different dates the same continuant may instantiate a great many different properties. But for it to be the same endurer at both dates, it must exclude from its (persisting) nature every temporary qualitative aspect, and this excluded portion covers a great many of the manifest properties. The endurer *bears* temporary properties but *is not* the object made up of them. The manifest object made up of all the properties, both temporary and unchanging, is therefore itself qualified temporally, like the properties that compose it. A temporally qualified manifest object is an object-at-a-time, i.e., an object-stage,¹⁹ and given the ways in which we perceive the world, this is how we recognize objects we encounter there. I think it will not do to argue that since everything expressible in terms of stages is equally well expressible in the language of 'endurers with dated properties inhering in them', there exists no commitment to such a recognition. Reference to temporally qualified manifest objects cannot be skipped or eliminated, and hence neither can object-stages. Let me explain why.

No doubt, the statement 'At an earlier date (in the past) *this* had different properties', by which the opponent of object-stages wishes to explain qualitative differences in the career of an object without reference to object-stages, is intended to be about an endurer and its

¹⁹ It must be obvious that by an object-at-a-time I do *not* mean here a *momentary* object. It is a stage that lasts for a while, but it is not long enough to involve dramatic changes such as becoming bald.

dated properties. In fact such a statement *cannot* be about any manifest object: if the referent of 'this' is considered to be the manifest thing that one encounters at a certain point in time, one obtains a logically defective statement. The reason is that, temporal qualifications notwithstanding, this object, *with* such and such properties, cannot *also* have different, incompatible properties. (Furthermore, if we grant that an object is a compresence of properties, whatever has different properties, in place of those borne by the manifest object before us now, is not going to be identical with the latter.) Neither can we suggest that in addition to instantiating its properties as indexed to the present time, the manifest object now has its (different) past properties as well. This involves committing an 'indexical fallacy'.²⁰ Hence for it to be logically acceptable, the statement must be about an endurer that is not manifest, namely about a certain theoretical entity presumed to exist within the manifest thing, and which is not distinctly accessible. Since at any time it exists, the endurer is within the manifest thing, demonstrating the endurer by 'this' is always a demonstration through what is manifest. We do not have, therefore, a logically viable statement unless we point to the manifest thing and mean the endurer that is empirically indistinct from it. This presupposes the grasp of a theoretical entity, which is a sub-compresence of properties, conceived in contrast with and in exclusion from what, as an object, is empirically accessible at the time of the utterance of the statement. It follows that unless one makes an essential contrastive appeal to the manifest object at the time of the sentence's utterance, one does not have a logically acceptable statement in terms of which an attempt was made to prove the redundancy of the object-stage. Two consequences of this are that, first, we derive our concepts of continuants from our concepts of manifest stages, and thus there can be no adequate concept of an endurer independent of that of the object-stage. Endurers presuppose stages. Second, appeal to continuants independently of what we observe of them at particular dates is prone to invoke unobservable and mysterious entities presumed to be grasped *a priori*.

It is a plausible point that Leibniz' Law is applicable to matters of diachronic identity. But inferring from this that object-stages are

²⁰ 'When I say *e will happen*, I am not implying that *e* is happening now in the future, though I *am* implying that in the future it will be possible to make a true statement by saying "*e* is happening now"' Lowe, 1987a, p. 66. See also R. M. Bradley, 1959.

otiose is not cogent; the argument 'Since by using properly tensed statements every property difference in the career of an object can be given an adequate explication, object-stages become superfluous, and thus such things are to be rejected' will not do. Such an inference either appeals to mysterious entities or simply assumes the very thing it aims at rejecting. I conclude that both endurers and stages must be acknowledged.

I have tried to show that facts concerning object-stages are not explainable purely in terms of continuants, and that the former, too, must be recognized. I submit that at every temporal point or period coinciding with part of the career or life history of a continuant there exists an object-stage supported, and hence manifested, by this continuant. Later in this chapter I will try to capture endurers by the notion of a 'form-token'. Now, however, I will describe the way in which an endurer is related to the object-stage it manifests at different points in time. The enduring object is not identical with any of its stages. A stage is the endurer at a date with the addition of the properties inhering in it as indexed to that date. Thus the properties that make up the endurer are, at any point in time during its career, a sub-compreence of the bundle of properties making up the object-stage at that time. It follows that object-stages are not the 'temporal parts' of endurers. Identity through time consists of the identity of endurers which, in addition to their properties (all of which are essential), bear a great number of accidental intrinsics, the possession of which is qualified both spatially and temporally. It is in such a sense that pointing at a manifest object-stage we speak of the diachronic identity of the endurer underlying it. We say of two spatiotemporally continuous stages that they are the stages of the same object if the endurer underlying them is identical through time.²¹ Let me add that we are not relativizing identity here, for we are not speaking of objects that are different as stages and identical as endurers. An endurer is at no time identical with the stage it underlies, though, of course such non-identity does not make the two things *distinct* at all. Finally, my indiscriminate use of the word 'underlie' in expressing the ontic conditions of both substrata and

²¹ Following Butler, 1975, we may say, if we desire, that upon the fulfillment of such a condition the stages are identical 'in a loose and popular sense'. Baxter, 1988, argues that the distinction between the metaphysical and the popular makes sense. Cf. Lowe, 1989, p. 27.

Object and property

endurers, with relation to the object, should not be seen as a ground for concluding that I treat matter and particular essence on a par. Indeed, both entities underlie the object but they do so in quite different ways. There is a sense in which one can regard both as (different) sub-compresences of the complete compresence of properties said to make up an articulated thing, but differences are deeper than similarities: the substratum is an object that underlies another, while – as I hope to show – the essence is a formal aspect of the object, which individuates it through time and across possibilities. Moreover, that an endurer underlies an object does not entail that an endurer is something in which properties inhere. On the contrary, the endurer itself inheres, along with other properties, in the portion of matter that underlies the object. It may be suggested, therefore, that the endurer underlies the object only formally, and not constitutively.

5.2 MATTER AND OBJECTHOOD

Much of the discussion of the last three chapters has assumed an intuitive grasp of the difference between an articulated thing and a parcel of matter. In what follows I shall consider the diversity of the conditions of existence through time applying to these two categories, and thus will clarify and render more explicit the difference assumed previously. As seen already, even where they cohabit, the ways in which these ontic types persist and suffer change display widely different patterns of ‘sensitivity’: what destroys one may entail only a slight alteration in the other.

Thus far I have assumed also without criticism that matter, as what sustains change, exists either as a benign substratum – that is, underlying an articulated thing – or independently, forming a body on its own. In either case, however, matter is said to exist as an object, whether or not we distinguish the portions or chunks from the particular quantities of matter that makes them up. Is this assumption justified, and does matter exist always in the state of objecthood? It would be detrimental to any version of the Qualitative Account if reasons were found for doubting this assumption. I will consider some of the ways in which we encounter matter, and will discuss whether there exists a sense in which such a category is more fundamental than that of objecthood.

5.2.1 Parcels of matter and particular quanta

To destroy the parts of an object is to destroy that object. Perhaps with this in mind, Plato held that the sum of the parts of an object is identical with the whole; that parcels of matter in fusion are parts of a whole only if their sum is the whole (*Theaetetus*, 204A, 205A). Accordingly, the sole valid principle of fusion for parts of concrete things is simple aggregation, a view that applies well to things like lumps of dough, blocks of marble, or glasses of wine. It does not, however, offer a satisfactory account of articulated things such as organisms, chairs, and television sets. We do not obtain objects of the latter sort by combining parts in any way we like, since for these the configuration of the constituents is crucial. Plato challenges this, presenting a dilemma: since there is no additional part that contributes to a chair other than its material constituents, either there is nothing over and above a simple collection of these elements, or if, as one should concede, there is such a thing, the elements making it up cannot be said to be its parts (*Theaetetus*, 205B). If the chair were something different from the material constituting it, it would be an 'incomposite', and this may be taken to imply the absurd consequence that such a thing cannot be destroyed by destroying the material making it up. Allowing as objects only what we today call mereological sums or fusions of distinct parts,²² such a point of view accounts for at least some of the motivation behind what is called anti-essentialism.

Aristotle's response to the challenge has been to officialize the distinction between articulated objects and mere parcels of matter, by pointing out that the former can be made to go out of existence without destroying their constitutive elements (*Metaphysics*, iv, 17). Articulated things are indeed more than the mereological fusion of their parts, but the additional aspect they involve is not itself a part; it is a principle, and in the case of living beings, for example, this principle is the substantial form. Aristotle sees a difference between articulated wholes possessing a natural unity, and those that are man-made: the plan or configuration according to which the parts of an artifact combine is not a substantial form, and the latter is borne by

²² For a calculus of individuals or mereology see Goodman, 1966, pp. 46 ff., and 1956. An earlier contributor to mereology is Lesniewski; see Tarski, 1956, p. 24.

natural kinds only.²³ Aristotle's ramifications imply that *pace* Plato the same elements may be viewed as mereological parts or otherwise, depending upon whether the whole they constitute has an organized nature. My hand, for example, is a constitutive part of my body and a mereological part of the flesh and bone that constitutes that body, without being a mereological part of the latter.

The subdivisions apply equally well to issues concerning identity through time: the conditions of alteration for articulated objects are somewhat different from those that apply to mere parcels of stuff. The former persist in a way that is different and, speaking of the arrangement of parts, one that is more vulnerable than chunks of bronze and heaps of salt. Again, while a constitutive part of the former type of thing is not the same in kind as the whole, in the latter the bulkier parts and the whole share their kinds: no proper part of a chair is a chair, but down to a level of magnitude any part of a chunk of wood is wood.²⁴ In the terminology of ancient philosophy the former has 'anomoëomerous' parts, that is, of unlike kinds, while the latter's parts are 'homoeomerous', of similar kinds.²⁵ Often, in what follows, I shall designate articulated objects simply by the expression 'object', while I shall reserve the word 'body' for parcels of matter. Let us understand by 'sameness of material composition' not merely sameness in kind of stuff but, additionally, the sameness of the particular material parts of a thing. Within rough limits, this amounts to the sameness of the particular molecules that constitute the thing, regardless of whether this thing is an articulated object or a parcel of matter.²⁶

Concerning the identity of articulated objects through time, the sameness of material composition seems to be neither necessary nor sufficient. Many objects which we confidently say have remained

²³ *Metaphysics*, iv, 17. Also see Scaltsas, 1990. In the *Physics*, Aristotle identifies the form of artifacts with the arrangement of their parts. See ii, 1. For a recent expression of the same idea see Brennan, 1988, p. 124.

²⁴ Physical theory says that below a level of magnitude the parts of the chunk include protons, electrons and quarks, and clearly such entities are not wood. See Lowe, 1988a, p. 72.

²⁵ For the criterion see Aristotle, *On Generation and Corruption*, i, 1; *On The Parts of Animals*, i, 5, and also Hirsch, 1971, p. 45.

²⁶ I speak roughly, without raising questions such as 'What is the relative proportion of molecules that must remain the same for material composition to be judged the same; would a huge body be the same with one molecule less?' In this study I will not address Sorites-type paradoxes.

identical to what they were before have in fact changed and do change their material composition drastically. Living beings renew their cells, and electronic systems, bicycles, and so forth are often altered gradually in material parts. So long as it is not effectuated suddenly, the material composition of an artifact can be changed almost entirely, without thus destroying its identity. In a sense, it can be said that the consequence implied in Plato's challenge is not absurd at all: after replacing the parts by new ones we may destroy them without destroying the object. Admittedly, changing a large proportion of an object's material composition at once destroys the object, but this is because implementing the change in question at once requires inflicting much more change than merely changing the material composition. For example, among other things, such implementation destroys the object's spatiotemporal continuity.

Retention of material composition is not a sufficient condition, for melting down a bronze statue destroys it despite the fact that its material composition has remained the same. More fundamentally, what accounts for the identity of articulated objects is the formal aspect or structure. Chunks of stuff are, in contrast, totally indifferent to the form they assume, though sameness of material composition seems necessary.²⁷ Again, however, it will not be sufficient. Bodies are the aggregates or mereological sums of their parts in adhesion. According to a fairly strong intuition, a parcel of sugar making a heap, for example, will be destroyed upon being spread on the table. Similarly, dividing a jugful of water into different glasses will terminate its existence. Still, in a dispersed state such stuff retains its particularity. Even though dispersal destroys parcels made out of those 'particular quantities' of stuff, the latter persist as sums or collections of just those material parts. No doubt such quanta are as sensitive to the destruction of their own parts as the bodies they

²⁷ 'Mereological essentialism' propounds that the parts of a thing are necessary to it throughout its career of existence. See Chisholm, 1976, chapter 3, Shoemaker, 1984, p. 237, van Cleve, 1986. Historically, Shoemaker attributes this position to Joseph Butler, 1975, pp. 99–105. Butler's application of the doctrine, however, goes well beyond ordinary parcels of matter. For him, even structured natural objects such as living beings are identical through time only if they remain intact in material composition. Since change occurs, it follows that in a strict and philosophical sense no object remains identical through time. 'In a loose and popular sense, the life and the organization, and the plant are justly said to be the same, notwithstanding the perpetual change of parts' (1975, p. 101). For more restricted versions of such an essentialism see Hobbes, 1989, pp. 84–5, and Locke, 1961, p. 275.

form in adhesion; unlike bodies, however, they are not affected by dispersal.²⁸ Thus what matters for the identity of particular quanta of matter as mere collections is the particular homoeomerous parts of which they are sums, regardless of the way such parts are distributed in space.²⁹

Recognizing the difference between particular quanta and particular parcels of matter takes us back to the issue of cohabitation. The difference in the conditions of persistence of the two imposes a finer distinction. Ultimately, the constituent matter of a structured object, that is, the sum of its material parts, is the particular quantity, and not necessarily the chunk the latter also composes.³⁰ Thus both the articulated thing and the parcel of matter share the same particular quantity of stuff. When we speak of the sameness of the constitutive matter we are speaking of the identity of the collection of parts of stuff of a certain kind, and not of the body made out of that collection.³¹ As noted just above, the persistence of the body is vulnerable to the separation of its parts while that of the collection is not. The latter will exist so long as its parts remain available. A particular quantity of matter perishes when its parts are so mixed among the parts of other bulks (as in pouring a glass of water into a pool), or so remotely spread or so altered in molecular structure that as a whole made of just those parts it has now become irretrievable.

²⁸ Lowe, 1989, p. 89, distinguishes between 'collectives' and 'aggregates' in that 'the former are, while the latter are not "scatterable", in the sense that the former can survive the separation of their (appropriately individuated) parts'. See also Simons, 1985. In adopting this view I side with 'conjunctivism' as regards quanta. For 'conjunctivism' see van Cleve, 1986, p. 142.

²⁹ See Hobbes, 1989, pp. 85–6. From a mereological point of view continuity is not required for concreteness. See Goodman, 1966, p. 51. See also Price, 1977, pp. 210–11.

³⁰ See Doepke, 1982, p. 56. On whether further multiplication of entities at the same position is possible, see Simons, 1985, Harris, 1986 and Simons, 1986.

³¹ I agree with Lowe, 1989, p. 37, who says that 'individual bodies of water stand in the same relationship to the sort or kind of water as individual horses do to the sort or kind horse, namely as individual instances, samples or exemplars'. Lowe opposes (for example) Quine's conception that a general mass term such as 'water' is true of 'water as a single though scattered object' and hence also true of 'each part of the world's water' (1960, p. 98). No doubt a large majority agrees that when we specify 'pieces' or 'bodies' of stuff kinds we are speaking of particular things. I think, however, there is also reason for speaking of the stuff that constitutes any such piece or body. H. M. Cartwright, 1970, Laycock, 1972 and Simons, 1985 make the same claim on the basis of different arguments. Here I will voice my disagreement with Laycock who sees such a constitutive stuff as a non-particular. I think the constituent of a body of stuff is a particular quantity, and this view is in harmony with the concept of a 'quantity' Cartwright, 1970, pp. 27–9, 31–3, defines in opposition to 'amount'.

Though not a metaphysical concept, retrievability of parts seems to be the criterion dictated by the predominant intuition concerning this issue. As Aristotle says, 'a drop of wine does not "combine" with ten thousand gallons of water, for its form is dissolved, and it is changed so as to merge in the total volume of water'.³²

5.2.2 Is matter 'non-particular'?

Can concrete matter exist independently of objecthood? Clearly, if it does, much of the present approach is undermined. Such a possibility also refutes the Aristotelian principles that only particular objects, that is, primary substances, exist apart, independently (*Metaphysics*, vii, 1, and xii, 5), and that as a condition of concreteness, matter must have acquired form (*On Generation and Corruption*, i, 4). If matter exists independently of objecthood it should be possible for it to be both concrete and general, and this also eliminates Aristotle's doctrine that what individuates a concrete particular is its underlying matter. The latter entails that the destruction of any particular is always the generation of another, in other words, the Benign Doctrine of the Substratum. The converse is not the case, and while I hold the consequent I reject the antecedent: in individuating objects through time, such a criterion does not permit the possibility of an object's changing its material composition.

I think many will affirm the following: first, destroying an object may not amount to the destruction of the portion of matter constituting it; second, the existence of a certain portion of matter somewhere does not entail a structured object made out of it; and third, a body is a particular possessing a boundary or form, and it is distinct from the rest of existence. Is there matter beyond this?

On Aristotle's own account, the underlying (proximate) matter is itself an object, and since the acquisition of attributes, as a form of change, is through the actualization of potentials contained in matter, the extreme hypothetical case of a totally unqualified (prime) matter will involve no actuality; in other words, such a thing is pure

³² *On Generation and Corruption*, i, 10. A contemporary restatement is in Laycock, 1972, p. 29. Contrast the thesis of retrievability with Eli Hirsch's view, 1982, p. 119, that 'we do not have any identity criteria for matter'. Hirsch rejects the explanation of identity in terms of the identity of particles constituting the parcel of matter, and claims that this would commit one to some sort of atomism (pp. 121–2).

potentiality. What is implied by this is that prime matter has no separate existence, and as such it is an abstraction. On the other hand, stuff of a given kind, a homoeomere, is always a constituent of an individual thing, whatever the formal changes it may undergo: it always exists as a portion of that kind of stuff. Given this principle, and the fact that things come into being and get destroyed, it follows, as he says, that 'in substance, the coming to be of one thing is always a passing away of another, and the passing away of one thing is always another's coming to be' (*On Generation and Corruption*, i, 3).

Are there grounds for saying that the type of relation holding between structured objects and portions of stuff repeats itself at a deeper level, between the portion of stuff and the stuff that makes this portion? Just as the chunk of bronze constitutes the statue, why not say that bronze constitutes the chunk? Often we talk about bronze, the material, as something with different persistence conditions from the chunk. We divide such dispersive terms as 'bronze' or 'water' by qualifying them with 'chunk of', or 'pool of'.³³ Most philosophers, on the other hand, draw the line of ultimacy for concrete material existence at the level of 'portions', where this notion includes both bodies and parcels of matter, and quantities of stuff made up of the collection of parts not necessarily in adhesion. For these philosophers the deeper relation mentioned above does not even arise. Like Aristotle, they think that, in abstraction from a portion, matter is merely a notion. As a conceptual device enabling us to hold general discourse concerning the resembling aspects of unstructured bodies, it is a universal. In experience no formless matter seems to exist; no material seems to manifest itself independently of a body, a collection of smaller bodies, or an object made out of such things.

Henry Laycock disagrees (1972, pp. 3–45). According to him, matter is a concrete but non-particular existence independent of, and more fundamental than, particular portions made of it (pp. 5, 6, and 26. See also 1989). Maintaining this will amount to lending independence to something like prime matter, if by stuff one means a fully general and undifferentiated principle. A milder view is implied if by 'matter' one understands a kind of stuff. I shall here combat the milder

³³ To repeat, I do not claim that unless we qualify matter in such a way we have no individuals. Cf. P. F. Strawson, 1971, pp. 35–6, and H. M. Cartwright, 1970. There exist particular quanta in the sense of scattered or fused collections of material bits and pieces.

thesis. My reasons for rejecting it will *a fortiori* count as a rejection of the stronger thesis (p. 32).

Laycock maintains that 'Stuff like water is ... concrete but non-particular, though it often occurs *in* particular things like lakes, rivers and bottles' (p. 26). Let us try to bring out the sense in which stuff-kinds, as concrete and general principles, are said to be ontologically basic and independent of particulars, although they often 'occur' in them. For this, we return to the idea that destroying a particular does not always amount to destroying the material out of which this thing is made. Articulated objects can be destroyed by simply changing their form. Moreover, as discussed in the previous section, chunks of stuff may be made to perish by separating parts from them. A lump of sugar may be destroyed by crushing or dissolving. The same sugar will, however, persist either in a dissolved state, or in the form of crystals spread on the table, or again when it resolidifies in lump form. Now is this evidence that the stuff constituting an object may exist independently of objecthood and that it has a more fundamental ontic status (p. 27)? Are we forced, in other words, to regard quantities of matter, the parts of which are not necessarily in adhesion within a single aggregate, as non-particulars? Laycock thinks that such matter is not particular after all: 'This cube may be destroyed ... But the sugar itself will not be destroyed by such processes. It will remain, scattered about or dissolved in the water. The existence of the sugar itself cannot be terminated by the simple sorts of means by which we may terminate the existence of items whose existence and identity is bound up with their spatiotemporal continuity – that is, particular objects.' He concludes that 'stuff seems to have a more fundamental ontological status than the things themselves ... We can and do think of stuff itself as having an *independent* reality.'

The theses of independence and of fundamentality over objects amount to a full-scale rejection of Aristotelianism when they are understood not as merely relative to a particular object such as the lump, but as relative to objecthood in general. Even if this sugar may exist independently of, and more fundamentally than, the lump it constitutes, does it so exist above any and all particular things? Surely the above considerations do not establish such a thing. A quantity of stuff may indeed exist without a shape and a definite position, if it happens to be scattered in space. Even if we grant that shape and definite position are necessary for particular bodies and objects, on its

own this does not warrant the conclusion that there can be concrete matter that is not a particular or is not made of particulars. Concrete matter either constitutes an individual body or is made up of (maybe scattered) parts which themselves have shapes and positions. As a collection of such parts a quantity of matter is a particular the identity of which is determined by the identity of its elements. It cannot be required that the conditions of particularity for collections should include definite position and shape. Thus Laycock's considerations do not refute the Aristotelian point of view in the broad sense, for at best what they show is that the existence of stuff of a kind somewhere does not entail the existence there of *particulars of that stuff*, and not that it does not entail the existence there of *any particular*. Let us examine this more closely. 'To say, for example, that there is gold in a certain region is certainly to assert the existence of *something*, but it is not ... to assert or imply the existence of any "gold-particulars" (bits or pieces of gold)' (1972, pp. 27–8. See also p. 38). We cannot infer from this that in the region concerned the quantity of gold is not made up of particular bits and pieces, even though individually the latter were not characterizable as gold. How is the claim of non-particularity substantiated, then?

The argument may be this. Even when it is distributed in parcels, concrete stuff as such involves no distinctness or individuality in the way that parcels made of it do. Parcels cannot be the basic reality concerning stuff, since the stuff making these bodies is itself a plurality of elements (molecules), where every such element is a particular. Crucially, these elements are not the same in kind as the stuff they make, and only *a plurality*, a collection of them, constitutes the stuff. This is why quantities of matter are not particular. If a quantity of matter is a plurality of elements not identical with it in kind, then it is not a particular, for such a collection is not given its kind by its particular elements.

There are two different streams of reasoning here. I will consider them one by one. First is the thesis that the distinctness of two bodies made of the same stuff does not even suggest the distinctness of the stuff involved: if, for example, we take two chunks of gold and then think of the gold in the chunks as distinct from the chunks themselves, we will see that we cannot think of the gold making the chunks as two distinct things in the same way we can think of the chunks as distinct from one another (p. 30). But mere sameness of kind can be

no guarantee for the indistinguishability of stuff that is in different portions. In addition to difference in objecthood, distinctness may, for instance, be based on a difference of provenance, or a difference in purity. If the gold in the chunks is not twenty-four carat in both, then the diversity involved will not be that of chunks only, but of gold as well. It makes sense, therefore, to speak even of gold as such as forming distinct entities, whether or not we draw the distinction by appeal to particulars.

More important, however, is to ask how one is said to think of the gold making the chunks as distinct from the chunks themselves without considering it an object of mental abstraction. Is it not because we conceive of gold as a multiply applicable universal that we can conceive it as a single entity, in spite of the distinctness of the bodies it constitutes? If this entails viewing matter as abstract, the contention that stuff is concrete and non-particular will have been contradicted. Thinking of matter in the concrete sense, on the other hand, seems precisely to think of it as the bodies it constitutes. The present objection does not assume that particulars must be concrete. The point is that there appears to be no clear, cogent way to consider the concrete gold before us as indistinct existence, separately from the bodies it constitutes. The burden of demonstrating that such a thing can be done rests with the defence of the independence of matter, and merely offering the example is no proof in itself.

Now for the second thesis that, although 'There is salt here' entails 'There are salt elements here', it does not imply that there is any particular body of salt here: each salt element is a body, but it is not a body of salt; it does not consist of salt elements.³⁴ Laycock says that 'a water molecule is *not* water, and neither is a part of such a molecule part of water. Water requires a plurality of water molecules; we cannot pour or boil or freeze a water molecule. It is a *thing* while water is *stuff*. Water may be water molecules, but it is hardly a water molecule' (p. 23; for a similar opinion see Lowe, 1989, pp. 99–100). Why should the smallest element of a kind of stuff not be a body of the same kind? Can being made of elements of the same kind plausibly be made a necessary condition of belonging to a certain kind? Molecules of salt are made up of parts that are not salt. But why should molecules of salt not themselves be bodies of salt; why should

³⁴ 1972, p. 38: 'Although each water-element is a body, it is not a body of water, since it does not consist of water-elements.'

the smallest elements of salt not be salt? If something is both a body and salt, then it is a body of salt, and it should not matter whether it is made up of one or more elements: it seems quite implausible to say that while a body made up of two salt elements is salt, one made of a single salt element is not.

As noted earlier, articulated objects are anomoeomerous; their parts are of a kind different from their whole. No part of a chair is a chair; only the whole is. Molecules are structured analogously: no part, no atom or sub-atomic particle constituting the salt molecule is salt. But if the whole chair is a chair, then the whole salt molecule is, by analogy, a body of salt. Perhaps the analogy is only partial, and it can be retorted that while the chair has parts none of which is a chair, apart from possible but very peculiar designs, no chair is an element of a chair. No ordinary artifact is an element of a whole the same in kind as itself, but the elements of a kind of stuff constitute this stuff by their plurality. Only their accumulation is this kind of stuff. Salt elements are not made of salt; how can they *be* salt?

But just what is a salt element? Which stuff-kind does it belong to? There are three possibilities. Either we classify it under a novel kind, or under the kinds of its constituent parts (i.e., under sodium and chlorine), or else under the kind it is said to constitute in a plurality. The first is awkward, *ad hoc*, likely to overcrowd the framework of categories, and too vulnerable to Ockham's Razor. The second entails skipping over the elements in favour of their constituents, either ignoring or destroying their structural unity. Salt is not, however, a mere accumulation of sodium and chlorine atoms. I submit that the only plausible way in which elements of a stuff can be classified is in that stuff-kind. Though they are not made of salt, molecules of salt are salt.

Laycock is indeed right when he remarks that we cannot pour, boil or freeze a single water molecule. Such operations require many molecules, and a water molecule is not stuff. It does not follow, however, that a water molecule is not water. A water molecule is water, but not water as stuff. A stuff-element is a body of that stuff, though not a body made of that stuff. The greater part of the world is made of composite stuff such as granite or blood, and no element of these is of their kind. But this is because there are no blood-elements (molecules) in the sense that there are water-elements. Blood is made of a plurality of elements, each different in kind, and only a mixture

of them is blood. But then, in the same sense, blood is not a stuff-kind; it is a composite of stuff-kinds.

Suppose it is insisted that the smallest elements of a stuff-kind are of a different sort both from what they form in plurality, i.e., the quantity of stuff, and from their own components. Would acknowledging such a thesis present an obstacle to the programme of accounting for matter in terms of objecthood and subsequently explaining objecthood as a compresence of properties? I think not, for according to the thesis in question stuff exists either in the form of a chunk or in finer bits and pieces. If the former, stuff is a particular body or aggregate, and if the latter it is a collection of bodies. Finally, I ask this: why should a quantity fail to be a particular just because it diverges in kind from its elements? It seems to me that envisaged as a collection of such particular elements the quantity is to be regarded as a particular. After all, a collection or a pile of chairs is made of chairs, and as such it has different properties from those of a chair: it is bulkier, spreads in different regions of space, and does not allow being sat on. As a collection of these individuals, though, it is a particular. I think every relevant aspect of what seems to be Laycock's argument for the non-particularity of stuff has now been demolished.

To consolidate my position I offer the following argument as a general refutation of the claim that the existence of stuff does not entail the existence of particular bodies made of that stuff. If valid, this argument will establish the ontological priority of particulars over constitutive matter. It will also demonstrate that no plausible case is made for the claim that concreteness does not entail particularity. This should not, however, be taken in the sense that concreteness and particularity mean the same thing; being a particular does not entail being concrete.

- (a) M is a specific kind of stuff which, by definition, is concrete and physical.
- (b) *Supposition*: that M exists in a spatiotemporal region does not entail that there also exist, there, concrete particulars of M's kind.³⁵
- (c) A concrete particular (an object) is a portion of stuff bounded by a form.³⁶

³⁵ A spatiotemporal region includes a great multitude of (perhaps infinitely many) positions.

³⁶ 'Being bounded by a form' does not have to be read, strictly, in the sense of *having a shape*. In this context the expression means at least 'having a shape', but depending upon what one understands by matter, it may mean more, including a whole constellation of

Object and property

These two will yield:

- (d) That M exists (in a spatiotemporal region) does not entail that M exists (there) in (single or several) portion(s), or as the inner part of a larger portion, bounded by a form.

The next premise is a principle:

- (e) If something concrete and physical has a spatiotemporal position, then it exists in (single or several) portion(s), or as the inner part of a larger portion, bounded by a form.

Given (c), and according to (d), it follows by *modus tollens* that

- (f) That M exists (in a spatiotemporal region) does not entail that M has a position there.
- (g) But if something is concrete and physical it has a position in the spatiotemporal region in which it exists.

From (f) and (g) we conclude by *modus tollens*:

- (h) That M exists (in a spatiotemporal region) does not entail that (there) M is concrete and physical.
- (i) Therefore, M may not be concrete and physical.

Since propositions (a) and (i) together yield the contradiction that stuff M is by definition concrete and physical, but also that it may not be so, the supposition (b), which is responsible for this contradiction, must be denied.³⁷

Likely objections to this argument would have to hinge on the two theses discussed above. The truth of principle (e) can be undermined if the distinctness of bodies made of a certain stuff does not entail the discreteness of that stuff, and the second thesis will allow (d) to be true

qualities. If what is meant by matter is something less qualified than the so-called Aristotelian 'proximate matter', then the form will be conceived in a richer way than the structure or shape. Cf. Sidelle, 1991, and my reply to him in *Dialogue*, forthcoming.

³⁷ My conclusion does not conflict with H. M. Cartwright's view (1970). Cartwright rejects that "'gold", in the absence of an adjunct like "piece", individuates nothing' (p. 26). This is consistent with my position, for what she rejects is not that 'this piece of gold' individuates some concrete thing. Moreover, granting her notion of a quantity, any such entity, I claim, exists either as a body, an inner part of a body or as a collection of (smaller) bodies, and nothing in Cartwright's paper goes against this tenet.

without (f) being true, for accordingly elements of M satisfy (c) without themselves being M. But neither of them is justified.³⁸

The limits of my argument are nevertheless contained in premise (e). Obviously, (e) applies only to the manifest physical world. If such a thing is only an 'appearance', and the reality behind it is different, (e) will fall short of capturing it, and hence my argument will remain blind to many of the most fundamental truths. For example, reality may be a plenum in the Parmenidean sense.³⁹ Energy and light, too, evade my argument, but, being about matter alone, it is not meant to apply to them anyway. Finally, it may be objected that at the sub-atomic level particles do not have sharp boundaries, and that under certain conditions they display wave behaviour. The present account is not intended to explain the ontology of theoretical physics, but if it were applied to such a realm, consistency would require that we think of microphysical entities either as waves or as particles, and not as both at once. Since the argument is about matter alone, anything but particles in the realm concerned *ex hypothesi* falls outside the scope.

If the theses on matter I have been defending thus far are justified, an important point begins to emerge. First, matter must always be 'informed', i.e., it exists always as an object. Second, rather than providing a principle of permanence for persisting things (I have argued that instead such a principle is contained in the form!), matter has the only valid ontic rôle of a benign substratum (which is not even an individuator at a given time). Third, as an object, the benign substratum can be reinterpreted qualitatively, that is to say, as a compresence of properties. It seems to follow that as a necessary analytic ingredient of objecthood matter is eliminable. In 6.4.2, I will sketch an analysis in this direction.

³⁸ A cloud may be said to be 'fuzzy', in both being blurred in form and rare in density, but it is concrete. Does it not follow that such things do not have determinate positions, undermining premise (g)? Form is irrelevant to the identity of a body; the latter may have indefinite boundaries and may be thin. Occupying a position 'thinly', fleetingly and without determinate borders is not failing to occupy it. Scientific theory tells us that at a given scale everything occupies space that way. (g) stands unscathed by this.

³⁹ Or rather in the Melissean sense, since while for Parmenides the One is bounded spatially (it is a sphere) for Melissus it is not. For Parmenides, see DK28 B8, and for Melissus DK30 B5 and 6.

5.3 OBJECTS' CAREERS THROUGH SPACE AND TIME

We return to the diachronic existence of articulated things. What does it mean for naturally structured objects such as living beings to remain identical through time? How do man-made tools, machines, engines and other products such as cars, ships and houses exist as the same objects despite the change they undergo? How do they preserve sameness?

5.3.1 *Artifacts*

Let us first consider the identity of artifacts through time. A criterion often used in the twentieth century has been that of spatiotemporal continuity.⁴⁰ Any neighbouring temporal slice of the object should be either at the same or at a neighbouring spatial point. If gaps in the temporal or spatial dimension intervene between the stages of the object, then this is an interruption, a break in the career of this latter, and it becomes questionable whether the object before and after the gap remains the same. A spatial, temporal, or spatiotemporal gap in the sense of complete non-existence seems logically possible, though highly unusual in the observable world.⁴¹ On the other hand, given any ordinarily occurring cases of spatiotemporal discontinuity, the material parts are preserved. Discontinuity merely involves cases such as dismantling, breaking, and the like. Whether in a radical sense or not, any loss of spatiotemporal continuity is the discontinuity of the object's form, but in ordinary cases of spatiotemporal gaps, the discontinuities take place only in the form of objects. So, within the context of an ontology of observables, by spatiotemporal continuity we will understand a formal criterion.

Is it not logically possible for something to be spatiotemporally continuous, but change drastically in qualities from one neighbouring spatiotemporal point to another? Can something not be at one moment a dalmatian and at the next a terrier? At one moment a pumpkin and at the next a carriage? Are Protean changes, or even

⁴⁰ The inspiration behind this criterion is Locke's already familiar maxim (see 4.2) that 'one thing cannot have two beginnings of existence' (1961, p. 274). A variety of contemporary formulations can be found in the following sources: Russell, 1948, p. 488; Broad, 1949, pp. 393, 346 ff.; P. F. Strawson, 1959, p. 37; Shoemaker, 1963, pp. 4–5; Coburn, 1971, pp. 51–101; Quinton, 1973, p. 67; Hirsch, 1982, pp. 15 ff.

⁴¹ Regarding cases of such radical gaps see the dispute between Coburn, 1971, pp. 51–6, and Brody, 1980, pp. 43–9.

those that are more extreme, impossible? Such upheavals do not happen ordinarily, and even rapid, radical changes (as with dough in the oven turning into bread, or paper turning into ashes) are gradual. So, normally, spatiotemporal continuity is accompanied by qualitative continuity (cf. Hirsch, 1982, pp. 7–15). Clearly, if the usual and mild instances of spatiotemporal or qualitative discontinuity can shed light on the problem of identity, then there is no need for considering the more extreme logical possibilities. Let me denominate these ordinary cases ‘spatiotemporal discontinuity of form’, or ‘discontinuity of form’, for short. If something does not suffer such discontinuities throughout its career, then this thing will be said to be continuous in form. For some time I shall use ‘continuity of form’ and ‘spatiotemporal continuity’ interchangeably, and then show that the latter is insufficient to establish the former.

A frequently occurring discontinuity of form is that of dispersal. Many artifacts such as watches, bicycles, or tents can be disassembled and reassembled. Others such as houses or vases, having more rigid structures, can be demolished and then rebuilt or mended according to the same plan. In all these, while the continuity of form is lost, the material parts remain spatiotemporally and qualitatively continuous, and thus their previous arrangement can still be restored. Hence, where the object after reassembly shares with the one prior to disassembly the same form and the same material parts, the sameness of form does not entail its continuity. It is, however, a widely held commonsense intuition that the objects before and after disassembly are identical. Clearly, if no additional explanation is offered, this entails that continuity of form is not a necessary condition of identity through time, and the proposed criterion is refuted.⁴² Some authors have suggested that if one does not want to give up continuity as a necessary condition, one should not insist on requiring the continuity of form; instead we should be content with the spatiotemporal continuity of the material parts.⁴³ Of course, there are two different things one may understand by such a revised criterion. It may be taken either to mean the spatiotemporal continuity of material parts without any restriction, or to apply to the structural parts of a specific kind of artifact. The former is a

⁴² The claim that continuity is necessary has been made quite explicitly. See Shoemaker, 1963, pp. 4–5, and P. F. Strawson, 1959, p. 37.

⁴³ See Laycock, 1972, p. 28; Price, 1977, p. 211.

highly implausible view, for among other absurdities it makes artifacts almost indestructible. Something that counts as a mereological part will persist even under very extreme circumstances, so long as it remains retrievable.

Requiring, on the other hand, the spatiotemporal continuity of the structural parts sounds obviously more reasonable, but I think this too will not do. For one thing, an artifact disassembled into its structural parts lacks a definite, fully occupied position in space and time (see Quinton, 1979, p. 201). If it is retorted that such an object is located where its parts are, I respond, first, that something with scattered parts is not a full occupant of space, but has gaps between its parts. But then how can something be a single object if it has no single fully occupied position? Secondly, the retort overlooks the difference between an integral artifact, say a bicycle, and the pile of its parts. But only the former has a function, and structural parts do not make an artifact without the structure itself. Moreover, dismantled parts may be scattered extremely remotely, and under such circumstances it becomes even less convincing to locate the integral artifact in its distantly separated parts. Suppose the parts of my bicycle get spread to the different regions of our galaxy. Where is my bicycle? Within the Milky Way, of course, but at no unique place in there (cf. Coburn, 1971, p. 93): will my bicycle be said to be in different places at the same time, and if so how will it be a particular? Finally, fitting the dismantled parts on other artifacts by making them functionally integral to these objects will leave no part of the original entity that is not a part of some other object, and hence on the view criticized the original artifact will have to be said to exist in other entities of the same kind. But surely we don't want to let one and the same part be shared by two different objects of the same kind (Lowe, 1983, p. 224).

How plausible is it to adopt a compromise according to which one will not be said to destroy an artifact by scattering it into its retrievable parts that remain identifiable as parts of an object of its kind, but again accordingly, destruction will be said to occur when such parts are made integral to other objects of the same kind (Lowe, 1983)? It would appear that what compels one to declare the first part of this sentence is common sense, and what dictates the second is the logic of identity. But I believe that this is not an acceptable position. I think the difficulty with it is that once we

suppose the artifact exists in its identifiable parts, it becomes simply arbitrary to rule that fitting such parts to other objects of the same kind terminates the existence of the original artifact. Clearly, under such circumstances, the parts concerned are still identifiable and retrievable. After all, why should one not judge on the very same commonsense intuition that the original object is recoverable after its parts have been used in other things? Suppose an artifact has been reassembled after such an operation. Would the awareness of the interim condition undermine the belief that the object built out of the same parts and according to the plan of the original is identical with the latter? Why should the original object said to survive in its parts be affected by the fact that these parts serve other objects in the meantime, if in the end they recombine intact?⁴⁴ My view is that while I acknowledge the ordinary intuition to the contrary effect, the claim that an object survives in its disassembled parts is quite difficult to hold, and cannot be plausibly restricted by the absurdity of the idea of an object's parts being at the same time parts of other objects as well. I believe that the absurdity involved arises precisely because of allowing survival in a dismantled state. I would say that such existence cannot be a metaphysical condition and seems to be based on a convention.

Other thinkers have adopted a less coherent view: they have suggested that outside of disassembly, continuity is a necessary condition, but when it comes to dismantling and reassembling artifacts, it is not (see Smart, 1972, p. 26). According to a last – and related – position, dispersal destroys objects; a disassembled watch is not a watch and was destroyed when dismantled. Commonsense intuition is, however, satisfied by conceding that if the material parts of such objects are preserved, then they can be brought back into existence by being reassembled according to the same plan. So much the worse for Locke's principle that the same thing cannot have two beginnings of existence (Coburn, 1971, pp. 91 ff.; Burke, 1980, p. 391). These philosophers do something rather hard to comprehend. When they declare that disassembly destroys the object they abide by the necessity of spatiotemporal continuity. But when they take the conjunction of the sameness of material parts and the sameness of form as a *sufficient*

⁴⁴ Lowe, 1986b, says that if a spare part is fitted in an artifact and remains integral to it only briefly it does not thereby become a part of it. I am not able to see this as a metaphysical judgment and find it openly vulnerable to the question 'For how long?'

condition for the identity of disassembled objects,⁴⁵ they thereby identify things separated by a spatiotemporal gap. Thus in the same vein they observe *and* flout the necessity of the continuity of form! There is a further question as well: will the same sufficient condition also be applied to the identity of artifacts in situations *not* involving disassembly? We have already seen that for the identity of artifacts through time the sameness of material parts is no necessary condition. Extensive renewal in material parts does not destroy identity; common sense will regard many ordinary objects whose parts have been changed as identical through time. This implies that even if the condition of the sameness of material parts plus the sameness of form is sufficient, it still is too narrow to be plausible. In many, perhaps a majority, of cases it will leave out what is identical. Thus, outside of examples of disassembly, the approach under consideration needs to rely upon a different, less restrictive criterion, and once again this turns out to be continuity of form. To be sure, in the latter we still have the criterion most widely accepted as a sufficient condition of identity. In order not to identify the dough and the bread, or the man and the corpse, both of which are continuous in form through time, the criterion is supplemented with the qualification of 'falling under the same sortal concept' (Wiggins, 1980, chapters 1 and 2).

5.3.2 The problem of the splitting careers

The last position we have been discussing now has two competing criteria of identity through time: the continuity of form versus the sameness of material parts and of form. This approach adopts these criteria as separately applicable sufficient conditions, one for explaining disassembly, the other for treating those cases not involving dispersal. But can the criteria be always applied exclusively or will they overlap and yield conflicting decisions solvable only by appeal to the 'best candidate'? A situation combining dispersal and continuity into one and thereby creating this logical difficulty is that of things

⁴⁵ An important question concerns the proportion of the parts of the original object that must be present in order for the reassembled entity to be identical with the former. The problem arises in modal contexts and there is debate over whether it extends to the temporal context as well. This is a question on which a sizeable literature has accumulated, but I will not discuss it in the present work. For some of the contributions in this area see Chandler, 1975; Chisholm, 1973, 1975, 1976; Salmon, 1982: appendix 1, 1984; Forbes, 1984; Over, 1986a, 1986b, 1986c; Lowe, 1986a, 1986b.

Change, matter and identity

'doubling up'. How artifacts can double up is vividly described by Hobbes in his *De Corpore* (1989, pp. 84–6).

Some place *individuity* [identity] in the unity of *matter*; others in the unity of *form* ... According to the second opinion two bodies existing both at once would be one and the same numerical body. For if, for example, that ship of Theseus concerning the difference whereof made by continual reparation in taking out the old planks and putting in the new, the sophisters of Athens were wont to dispute, were, after all the planks were changed, the same numerical ship it was at the beginning; and if some man had kept the old planks as they were taken out, and by putting them afterwards together in the same order, had again made a ship of them, this, without doubt, had also been the same numerical ship with that which was at the beginning; and so there would have been two ships numerically the same, which is absurd ... A ship ... will be the same as long as the matter remains the same; but if no part of the matter be the same then it is numerically another ship.

Hobbes construes the identity of form without a qualification, and from such a point of view is right to reject it as the criterion for identity. Still, this is not a valid objection to the notion of continuity of form under a kind: as a criterion, the latter identifies the repaired ship unambiguously with the original. As for the rival criterion (sameness of material parts and of form), this picks out the ship made out of the discarded planks and therefore agrees with Hobbes' own intuition. The point, however, is that the two types of circumstances which ordinarily occur, and hence call for the use of the criteria separately, arise here within the same situation. It follows that those who embrace both conditions of sufficiency face the consequence of violating the law of transitivity of identity: while by one of the criteria the original ship is identified with the renovated one, the other criterion identifies it with the ship made of the old planks. Although we have two numerically and qualitatively different ships, identifying both with the same thing (the original ship) requires by transitivity that these be identical to each other. But since this identity must be rejected, either the law of transitivity was violated, or one of the criteria used in identification was wrong.

As we saw in the previous section, each criterion has advantages and disadvantages. No compelling argument has been produced in refutation or proof of either, and those who adopt one rely on their

own intuitions for rejecting the other.⁴⁶ As for those adopting both, in order to avoid the absurdity just pointed out, some have claimed that in circumstances of disassembly continuity of form does not apply. However, others hold that although continuity is not necessary in normal cases of disassembly, if (as with the ship of Theseus) the situation includes competitors displaying continuity, then the latter should be said to endure identically, and the criterion of same parts and same form be treated as defeasible.⁴⁷ Can the issue be as arbitrary as that?⁴⁸

In my opinion it can not, for even if the sameness of material parts and of form captures a certain concept of identity through time and thus satisfies common sense in certain problematic cases, it misses a stricter but more fundamental notion of identity. Is this not, at any rate, what the aforementioned logical difficulties indicate? Even if, in one sense, we can say that after reassembly we have the same object, the fact remains that since there are two beginnings of existence, we have, in another sense, a new and distinct object at hand. In the same way, even if in one sense the ship reconstructed out of the old planks is identical with the original, still, in another sense, the renovated ship is identical with it too. The solution I propose, then, is that the criteria under discussion do not capture the identity of artifacts in different situations under the same concept of identity. Rather, they account for the identity of artifacts under different concepts of identity through time.

The idea that there are different senses of identity, and consequently different senses in which things can be said to exist, may not

⁴⁶ I am unable to accept Lowe's argument (1983), because it makes essential use of the idea that a dismantled artifact continues to exist in its identifiable parts so long as the latter do not become (or are not in the first place) integral to another object of the same kind. Moreover, Lowe's proposal involves ignoring a certain well-rooted intuition, instantiated, among others, by Hobbes himself.

⁴⁷ For the former see Coburn, 1971, p. 94, and for the latter B. Smart, 1973, p. 25. According to this approach a criterion of identity and the entity it implies are defeasible if under the circumstances there exists a better candidate. Thus one may make potentially incompatible claims about the identity of things depending on and relative to whether or not there happens to be a stronger candidate in the context. As Lowe notes (1983, p. 223), if the 'better claimant' were somehow destroyed it would follow absurdly that what was not identified with the original object up to a certain time would become identical with it after that.

⁴⁸ See also Nozick's 'closest continuer' theory, 1981, pp. 43 ff. Wiggins has made a compelling objection (1980, pp. 94 ff.) to this approach, which has come to be known as the 'best candidate theory'. For a critical discussion see Noonan, 1989, chapter 7, 1985a, 1985b, 1986d; and Garrett, 1985, 1987. See also Brennan, 1988, pp. 114 ff.

be a universally appealing one. Some philosophers have maintained that 'identity' and 'existence' are univocal (Lowe, 1989, pp. 5 and 22; Noonan, 1988b, p. 81). The neatness and advantages of such a rival proposal are obvious, but my belief is that enforcing it has to be at the price of eliminating some strong commonsense intuitions. Such intuitions may be somewhat unclear or even inconsistent, but I think they should be appropriately accommodated. I doubt that common sense can be refuted by arguments, for it is not a philosophical theory. Rather than changing such intuitions by criticism I think we should try to make room for them in our explanations. Distinguishing two senses of identity is my attempt to do this, and other philosophers have drawn such distinctions in various ways. (Butler, 1975 is one example. See also Baxter, 1988 and Chisholm, 1973, 1976.) In addition, I note that I find no compelling argument behind the claim of univocality, and moreover cannot regard it as a logical truth. A restrictive distinction between different senses will not relativize identity or existence.

5.4 THE SAMENESS OF FORM-TOKEN

I shall now maintain that when the conjunction of the sameness of material parts and the sameness of form is offered as a sufficient condition of identity through time, the samenesses thus required are not on the same level. While one is sameness between the tokens of something (i.e., of stuff or of parts), the other is sameness between the types of something (i.e., of form).⁴⁹ Let us conceive of form-tokens as opposed to form-types. For example, two mass-produced dolls share a form-type but have distinct and unique form-tokens. I shall suggest that what we have in standard, non-problematic instances of artifact identity is that of form-token in addition to identity of token material parts. If two things are the different temporal slices of an ordinary object that remains intact through time, then these two not only share their token parts but share their form-token too. This is what the notion of continuity of form (under a type) approximates.

Let the expression 'sameness of form-type' signify the relation held between objects, the parts of which have been combined or arranged

⁴⁹ Strictly speaking, the former is sameness and the latter exact resemblance. For the characterization of the form (token or type) as a relation holding between the parts or the properties of things cf. Gracia, 1988, pp. 130–1.

according to the same order, design, or plan. Then the expression 'sameness of form-token' will denote the unchanged, intact arrangement or combination of the parts of an object in time, whatever this arrangement may be. It follows that such sameness of arrangement can involve a single event of original combination, and thus requires a particular origin.

Clearly, that two things have the same form-type does not entail that they will have the same form-token. Furthermore, their being the same in form-type does not entail that they are identical, even if both belong to the same kind: we may think of two exactly similar cars on the assembly line, or the original and the replica of a famous sculpture. Moreover, if two things share the same form-token, then, however extensive, any difference in material composition between them must have been owing to a change occurring gradually in time. If the change in material composition happens all at once, then although the sameness of form-type can be preserved, sameness of form-token is lost. It should be obvious that if two things are the same in form-token, then they share the same form-type. But mere continuity of form does not guarantee the continued identity of either form-type or form-token. It is continuity under the same form-type that amounts to having retained the same form-token through space and time.

Granting the distinction just drawn, we can say that any artifact dismantled and then reassembled exactly according to its original detailed plan has lost sameness of form-token, but possesses sameness of form-type and has the same token material parts. The original form-token was destroyed when the artifact was disassembled. I shall contend that these notions provide criteria for identity through time and across possibilities. But first, some further clarification is needed.

5.4.1 The character of the form-token

One may feel that in the *prima facie* characterization made just now, the notion of the sameness of the form-tokens of stages of an object that remains intact was based on an implicit assumption that there is an identical continuant object through the stretch of time extending between these object-stages. It may seem, then, that any further attempt to account for numerical identity through time in terms of

the sameness of form-token will be circular.⁵⁰ This is not true. In speaking of logical priorities, the notion of the sameness of form-token is not made to presuppose the numerical identity of the object to which it applies. On the contrary, sameness of form-token explains and constitutes a sufficient condition for a certain notion of identity through time. Let me offer a more detailed account.

Suppose that at a certain time and in a certain spatial region, bodies a,b,c,d stand in the mutual configuration r1. At the same time bodies e,f,g,h are situated at a different spatial region, and their configuration, r2, is exactly similar to r1. Using for simplicity of expression the jargon of 'universals', we may say that r1 and r2 are the instantiations of the same universal R. They are different instantiations, for they are two distinct configurations existing simultaneously. Moreover, it is possible to shuffle the bodies constituting one of these collections, thereby destroying one of the instantiations of R, without destroying the other, or the bodies themselves. Differences in the spatiotemporal positions, that is, the intervals between the instantiations, determine their distinctness as tokens, while their exact similarity accounts for their sameness under one universal (or type).

Imagine this operation. Suppose that at a later time (at the same spatial region or elsewhere) we shuffle the bodies a,b,c,d so as to make them acquire different mutual positions. At that second stage, therefore, no r1 is left, and consequently R is not instantiated by a,b,c,d. Then, at a third stage, we rearrange a,b,c,d according to the (universal) plan R, and get r3. It must be maintained that configuration r3 is *not* the same particular or instance as configuration r1, although both are the instantiations of the same R. Above, a spatiotemporal distance between r1 and r2 has been found sufficient for the distinctness of these configurations as particulars. Moreover, this distinctness has been regarded as being independent of the difference between the pertinent relata (i.e., the bodies a,b,c, etc.). Similarly, r1 and r3 should be said to be different instantiations of R, even though, unlike the relation between r2 and r3, they share their relata. At the second stage, the instantiation of R in a,b,c,d was lost, and until the third stage, a,b,c,d existed without bearing R. It will not do to suggest, therefore, that because they share a,b,c, and d, r1 and r3 are the same instantiation, for these two are separated by a spatiotemporal gap.

⁵⁰ In a fully generalized version, this type of objection can be found in Lowe, 1989, p. 134; 1988a, pp. 68–71.

To deny this and maintain that $r1$ and $r3$ are not only the same R , but also the same particular instantiation, will entail rejecting all distinction in terms of particular and universal between bearers separated temporally (e.g., between object-stages), whether or not these bearers share their material composition. According to such a denial the existence of temporal gaps between the instantiations of the same universal is not sufficient for the distinctness of such instantiations. This consequence is blatantly absurd, and the view furnishing it is incapable of accounting for some of our firm ordinary intuitions. Would we treat the acquisition, for example, of the same colour by the same object at different times as the acquisition of the same colour-instance? Specifically, why should the same hair, dyed in the same specific hue-type on two different occasions, be said to bear the same particular colour? Did the former colour not wear off, to be replaced by the new one? I conclude that $r1$ and $r3$ should be called different particulars.

Consider now the concrete *structures* $r1(a,b,c,d)$ and $r3(a,b,c,d)$, where $r1$ and $r3$ are spatially continuous (i.e., in adhesion) and rigid configurations. For brevity, call these structures A and B respectively. A and B are separated spatiotemporally. Clearly, there is a sense in which these concrete structures involve an important difference, despite their exact similarity and their sharing the same constitutive material. A and B differ, for the intrinsic relational properties marking these structures, which instantiate the common plan of A and B , are different particulars. If a structural plan, that is a configuration-type, yields a function so that the particular structures A and B can, under appropriate circumstances, operate (or be operated on) for the achievement of an end-state, then A and B are articulated objects. The configurational properties $r1$ and $r3$ give A and B 's form-tokens, and R their form-type.

I am not supposing that because A and B differ in this respect they must be treated as distinct particulars themselves. My thesis is that if the intuition that the spatiotemporal continuity of the whole object, and not merely of its parts, is a necessary condition of its identity through time has any appeal, then the present difference explains such an intuition. Also, the judgment regarding the difference of form-token is not conceptually derived from a prior assumption concerning continuants: the decision that the particular configurations structuring A and B should be distinct was not based on the truth of the

proposition that A and B themselves are not the stages of an identical continuant. We established the distinctness of these configurations independently, and in so far as we can call upon intuition to tell us that A and B are different, we account for this in terms of the distinctness of the configurations.

The explanation will take the following form. First, it seems true, though trivial, that the loss of R for a given structure whose elements are related by a configuration instantiating R entails the loss of this structure. With the loss of r1, that is, by being reshuffled and reassembled according to a different plan, or by being separated altogether, a,b,c,d lose R, and A simply doesn't remain. After all, the configuration inhering in a structure is as necessary for it as its parts or elements. The structure was lost because R was lost; the loss of R is not the consequence of the loss of the structure. A particular object loses a universal only through losing the object's instantiation of that universal, and hence what is lost is a particular property. Since ultimately we are speaking of particular objects and their particular properties, retention of R without retaining the instantiation of R (i.e., acquiring another instantiation of R) will not be enough to secure the object's identity.

I have said that if a rigid configuration of parts yields a functional structure, then this gives the form-token of an object. We must note that the configuration of the parts of an object is, more fundamentally, that of the functionally relevant *intrinsic properties* of the object. From the point of view of a qualitative theory, configuration of several bodies is basically the configuration of the qualities of these bodies. Each body and each of its own parts, and each of the parts of its parts, has its own qualitative configuration, and, given a concrete structure made out of a number of bodies, the configuration binding these bodies is also the configuration of the configurations (and so on) of the qualities of these bodies (i.e., of the parts of the structure). Given an object, the qualities of this object, which, by the particular configuration they are in, determine its function, constitute the form-token of this object.

From the point of view of the bundle theory a form-token is a particular functional configuration of particular (bundles of) properties. At particular positions such complexes constitute sub-compresences of richer bundles that make up object-stages at points in time. Take two dates t1 and t2 at which there exist two particular configurations of

property *x* and *y* the same in type. *x* and *y* are, in other words, indiscernible. If *x* is connected with *y* by a spatiotemporally continuous path of neighbouring complexes of properties involving *no difference* apart from their spatial and temporal components, i.e., each remains indiscernible from *x* and *y*, then these complexes may be viewed as illustrating an identical form-token persisting from *t*₁ to *t*₂. With one important difference, of course: a form-token never exists in isolation from an object, in the manner we abstractly conceive it in this example. A form-token is always a sub-compreence of properties, and the qualities falling outside this sub-compreence are ones that through time change in profusion. As an abstract illustration, however, the example does its job properly. Thus we understand that the diachronic identity of a form-token is its remaining continuous through time without a difference occurring to its configuration or components.

Let us specify continuity in space and time as the existence of a series of properties such that given any in the series, first, a temporally neighbouring (contiguous) property is (a) exactly or nearly exactly similar and (b) either at the same or at a neighbouring spatial point, and second, there exist in the series earlier and/or later properties that are causally connected with it. Given a configuration of properties at *t*_{*n*}, what this conception requires is simply that at points in time neighbouring *t*_{*n*} there be highly similar configurations at spatial positions neighbouring that of the configuration at *t*_{*n*}, and that there be causal connections between this configuration and earlier and later configurations in the series. As a rich compreence of temporally qualified properties, an object embodies a form-token, which consists in a sub-compreence of properties that remain unchanged throughout the spatiotemporally continuous existence of this object, and which is thus wholly present at every stage of the object. Hence the form-token that lasts unchangingly is an endurer, and its diachronically identical existence is the existence of exactly similar neighbouring sub-compreences, themselves compresent with properties causally connected to properties compresent with it. That is, temporally indexed accidents that accompany the form-token at any time should be causally connected with its earlier and later accidents.

As it develops, my particularistic approach will continue to display obvious similarities to the Tropes View. There are, however, important differences as well, and in the next chapter I will criticize tropism just in those respects with which I disagree. For one thing,

in spite of its analysing objecthood as a bundle of particular properties, my approach will retain an indispensable commitment to Aristotelianism. Throughout, I will remain faithful to the principle of inherence and to the doctrine that substances are the basic units of physical existence. Moreover, I espouse the Benign Doctrine of the Substratum in the full variety of its applications. In contrast with the standard versions of tropism, on my view properties are dependent existences and, physically, ontic priority goes to objects; properties are fundamental only in the analytic sense. In suggesting these, however, I do not pay the price of acknowledging mysterious substrata, and I think this is a high merit of my theory.

5.4.2 Two concepts of identity through time

I will say that two object-stages which share the same form-token are M-related. The stages of normally continuing intact artifacts are thus M-related. Let A and B, on the other hand, be two object-stages such that A is dismantled at a certain time, and later B is obtained by reassembling A's parts according to the same plan. As we have seen, the relation holding between A and B is based not on the sameness of form-token but on the sameness of form-type, and this latter does not connect the stages of an object claimed to be identical in time in the same way as the former. A and B are not M-related. I will call the C-relation what holds between any two object-stages that have the same parts numerically and the same form-type. Hence A and B are C-related. Moreover, any continuant, the temporal slices of which are C-related, will be termed C-identical.

I shall argue as follows: since the stages of an object C-identical in time do not have to be M-related, even if common sense adopted C-identity as its concept of identity this would fail to capture another relation of identity, namely M-identity, which holds for an enduring entity the stages of which are M-related. Even if C-identity were the generally accepted concept of identity, this would not exclude the existence of a stricter notion of M-identity. Clearly, C-identity is weaker because, as noted already, sameness of form-type does not entail sameness of form-token. Thus something C-identical through time does not have to embody one and the same endurer. Furthermore, while a gradual but extensive change in the material parts of two M-related object-stages does not preclude their belonging to the

same continuant, such circumstances will bring about the numerical distinctness of C-related object-stages: if A and B were composed of merely qualitatively identical parts, A and B would then be qualitatively identical but distinct artifacts.

The distinction introduced allows us to accept the spatiotemporal continuity of an object as necessary for its identity in time, along with the idea that we can repair a watch without destroying it. In at least one sense of 'exist' (based on the notion of M-identity), we cannot say that an articulated object goes on existing even in a dismantled state and that what guarantees its continued existence is the spatiotemporal continuity of its parts and not necessarily of the whole intact object. For according to this sense of 'existence', the spatiotemporal continuity of the parts would ensure the continued existence of these parts only. My explanation is this: the watch before and after the repair is the same, numerically identical object. However, the sense in which the watch remains an identical continuant before and after the repair is based on a weaker notion. It seems to me a highly confusing thing to say that the dismantled watch-parts spread on the repairman's desk contain a single 'wholly present endurer'! The stricter numerical identity for which spatiotemporal continuity between every stage of the object is necessary was lost at the time when the object was dismantled for repair. A new object (and a new endurer), again strictly identical with itself, was brought into existence after the repair. It is thus possible to think of the same watch (in one sense) as being in fact five consecutive watches, each identical with itself (in another sense) over a stretch of ten years, during which it went to the repairman four times. There is just not a single endurer in the watch throughout its existence over these ten years.

But doesn't this relativize identity? Consider the example once more, and compare what goes to the repairman, i.e., A, with what comes back from his workshop, i.e., B. I have declared that A and B are C-identical but not M-identical; that they are the same 'C-thing', but not the same 'M-thing'. Though I have denied commitment to relative identity, is this not, nevertheless, stating it outright? I say no. Indeed the syntax of the above depiction may give such an impression, but then this effect is specious, and the present account has nothing to do with the relativization of identity. Relativity involves the same thing yielding different results, e.g., different judgments, in application to different contexts. In my account, what yield the

different results are not the same. More specifically, relativizing identity is to judge on the basis of the *same concept* of identity that A and B are the same under one sortal and not the same under another. In contrast, what I introduce here are two *different concepts* of identity based on different criteria, and we judge that A and B are the same according to one of these concepts of identity, while they are not according to the other concept of identity. This is not relativizing what is a unique concept; it is judging on the basis of more than one concept, and doing so *absolutely*. Judgments of M-identity, for example, do not vary according to sortals. If A and B are M-identical under F, they will also be identical under any other sortal G, and *mutatis mutandis* the same applies to C-identity. M-identity and C-identity are different concepts and not the same thing relativized. Moreover, if someone wants to speak in terms of 'C-thingness' and 'M-thingness', I should remark that these are not sortals or different kinds of things. They are different categories with different criteria of identity.

The conditions of possessing C-identity must be weak enough to guarantee the continued existence of an object over a period of disassembly. (This does not exclude a case in which the parts are fitted on other objects, for even so they remain retrievable.) As I have pointed out already, at least a majority of the parts must preserve their strict numerical identity (i.e., M-identity). They must be spatiotemporally continuous. Moreover, the memory of the order of their arrangement (i.e., the memory of the object's form-type) should not be lost. This reveals the conventionality behind the notion of C-identity.⁵¹ Invoking here the arguments of the following chapter, I may affirm that the form-type is not objective. It is a concept the understanding creates in making sense of the world.

A smooth account of the case of the ship of Theseus is now possible. Both the new ship and the ship made of the old planks are identical with the original, intact ship. But the transitivity of identity is preserved because the present co-existing two ships are not identical with the original in the same sense. While the stages of the

⁵¹ Concerning objects of art or of historical significance, C-identity is more important. Moreover, let me note that M-identity and C-identity do not correspond to the 'strict philosophical' and the 'loose and popular' senses of sameness distinguished by Butler. My distinction applies to artifacts only, and employs the 'form' as a criterion. In contrast, Butler's distinction applies correctly to bodies, but is – I think incorrectly – extended to all sorts of objects: it employs material composition as criterion.

spatiotemporally continuous ship before and after repair are M-related, the stages of the original and those of the reassembled old parts are only C-related.

Spatiotemporal continuity (or continuity of form) is a necessary but not sufficient condition of sameness of form-token through time; since the latter is itself necessary for M-identity through time, continuity of form is necessary too. Continuity of form, even with other necessary criteria such as sameness of kind and of original matter; will not however make a sufficient condition. A ship may be gradually 'renovated' into a different ship of a totally different model and qualitative attributes. A sufficient condition of M-identity must therefore involve sameness of form-token (or continuity under the same form-type) and not mere continuity.

The last point deserves greater emphasis. It is an important but rarely recognized fact that an object may undergo substantial change without suffering a change in its kind or a discontinuity in its form. Any artifact can be made to change into a different thing of the same kind by modifying its form gradually. Through gradual alterations a carpenter could change a table into a different one. The earlier, austere-looking oblong table and the later highly ornamented round one that succeeds it are continuous in form, but hardly the same table. One can imagine the customer's scolding the carpenter: 'I want my table back. You did not repair it; you destroyed it.' Trying to convince the customer by pointing out that he and his family have eaten hundreds of times on that very board would have little effect, for given his awareness that having the same wood planks does not amount to having the same table, the customer would rightly feel cheated. The earlier and the later table-stages share their constitutive matter and are continuous under the same kind; but that is all. Such identities do not ensure the identity of the articulated object. Out of the same wood, and without disturbing the continuity of form, the carpenter can build another table (see Quinton, 1973, p. 68): he will not thus destroy the kind of object. If neither M-relation nor C-relation holds between the table-stages, in spite of the fact that the two are made of the same wood and are continuous under the same kind, what is it, the loss of which brought about the loss of the substance? I suggest that it is the particular essence that was lost here, and that this corresponds with the notion of the form-token.

Perhaps this argument does not establish that the object's identity depends upon an (unshareable) particular essence, as securely as it demonstrates that an essence determining the identity cannot be as general as the kind. It shows that to capture identity, allowable formal change must be further restricted, that 'continuity while belonging to the same kind' must be specified down to 'continuity while possessing the same form-type' (the same plan).⁵² This cannot be sufficient, though: the form-type is something shareable, however detailed it may be, and precisely this point refutes the Identity of Indiscernibles as a sufficient criterion. Even if, in observable physical nature, no two things share exactly the same form-type, the latter is still shareable in the sense of a logical possibility. But if so, since two or more objects can possess it, a form-type cannot on its own capture the identity of an individual. What can individuate it, as I proposed earlier, is its spatiotemporal continuity while it possesses the same form-type, or the continuity of its form-type, and the latter amounts to retaining the same form-token through time. Any two object-stages continuous in form-type share the same form-token, and are the stages of the same enduring individual. In chapter 7 we shall see that such stages also share the same particular origin.

Since both correspond with the particular essence, the concept of form-token and Duns Scotus' *haecceitas* are closely analogous: in fact the form-token provides a positive interpretation for the latter. What I have now suggested conflicts with the use of 'thisness' in some recent literature, where the term means a non-qualitative individuator, a principle amounting to a bare particular (see Kaplan, 1975, van Fraassen, 1978, and Adams, 1979). The form-token involves every intrinsic property contributing to the function of the object and some more, lending the individual its unique peculiarities. It is particular because the qualities making it up are particulars. It is no trivial notion, however, for it does not amount to the object: first, it is not as rich as what I have called the 'complete form', and, second, in isolation from the object, it is a mere abstraction.

⁵² With reference to the case discussed in the previous paragraph, we can say that the form-token is lost there because the form-type (though not the kind) is lost. Any other table sharing the same oblong form-type would lose identity by undergoing the same transformation into a fancy round table.

5.4.3 Form-token as individuator through change

Clearly, there is no entailment that particular essences be non-qualitative, and the form-token is perfectly legitimate in such a rôle. Given the argument of chapter 3, at a point in time an object is individuated by every quality it has in the spatial position it occupies. Anything identical with that object must share with it every quality-token at that position, including its form-token. The latter does not individuate an object at a point in time, for it does not comprise accidents. I construe the form-token as a criterion of individuation through time and across possibilities in that, given the form-token of an object-stage, any *other* object-stage possessing it is a stage of the same individual. Since through time or across possibilities things alter and move, the Indiscernibility of Identicals is inapplicable in determining different stages as those of an M-identical continuant: different stages of the same thing are not identical. If they are M-related, they are stages of the same (M-identical) thing, and *vice versa*.

To be sure, in asking whether an object is identical through time we are not querying whether its different stages are identical amongst themselves. Asking whether this old and crumpled car in the back yard is the same as the attractive sports car my neighbour used to ride twenty years ago is not making an inquiry concerning the identity of a new and an old car, quite different in properties. It is a question about whether this old car was, twenty years ago, my neighbour's then favourite showpiece. Identical stages are indiscernible; their sameness cannot be based on their sharing a form-token alone. What connects the old car with its earlier days, that is, what captures the M-identity of an endurer, is the M-relation, and, in its turn, the latter is the possession of the same form-token by the different stages of this object. Capturing the form-token is capturing the essence of an individual; it is the unchanging endurer through time.

Nothing hinders duplicating an individual's form severally. Many distinct individuals can share exactly similar forms, and such a thing is much more specific than, for example, different humans sharing a common nature: the form-type of an individual is quite different from its 'suchness' or kind. Different human beings possess very different formal accidents. Only so-called identical twins come close to possessing exactly similar forms and, speaking logically, it is not impossible for them to be exactly similar. The distinction between the form-token as

a particular essence and the kind picks up the difference between, for example, Socrateity and Humanness, where the former is envisaged as a species falling under the latter seen as a genus. It extends the Aristotelian hierarchy down to the level of the individual, applying what Aquinas proposes concerning intelligences and angels to concrete entities. Reasoning in a similar way, Leibniz went a step farther. In his attempt to determine the particular essence, he included every property, every accident of the object, and, as I have explained earlier, he did this by conflating the two different senses of a principle of individuation. He imposed the requirements of distinctness at a moment in time upon the individuation of objects in-spite-of-difference. Leibniz therefore maintained that every difference in an object's properties is already contained in it, a thesis closely connected with his contention that there is a 'preestablished harmony'. But against Leibniz, it should be remarked that the so-called distinguishing characteristics of a thing do not 'logically' individuate this object in-spite-of-difference, as they do empirically. For logically, not only may two things be exactly similar, but they may also last through their entire careers as similars.

5.5 THE IDENTITY OF LIVING BEINGS

When one considers the inherent dynamism of the world of living beings the amount of alteration artifacts suffer appears comparatively little. Striking characteristics of organisms include their growth and the constant renewal of their material composition. Living beings are continuous in space and time, and this seems necessary to their existence, but unlike artifacts they do not retain identity in form, at least not on the surface. Can continuity account for the identity of living beings through time, and what exactly must it involve for this? It is an empirical fact that the extent of growth varies according to the kind of living being. In certain cases the earlier and later temporal stages of an organism retain a remarkable resemblance to each other, almost amounting to exact similarity of form. It may, for example, be possible to identify a child's photograph as the youth of a well-known person. But in many other cases growth brings such thorough change that the appearance and the observable structure of the individual retain very little in common with its earlier stages. Metamorphic changes may involve disproportionate growth, functional changes, retraction of some parts of the body which become dysfunctional

through time, and the generation of parts altogether new for the individual.

Given the fact that all organisms undergoing metamorphosis are spatiotemporally continuous, let us ask how far the spatiotemporal continuity guarantees the continuity of form? Spatiotemporal continuity is necessary for the retention of form, since disassembly into parts entails loss of form. But more importantly is it sufficient for the continuity of form? In the case of artifacts we have good reason for saying that it is not: the bronze statue of a head of state which, after a coup, is melted down and then becomes a huge garbage bin is clearly continuous in space and time, but loses its original form. Is there reason for thinking that similar cases can arise in the realm of living beings? Even though such a thing does not normally occur, is it not at least logically possible that a living being, spatially continuous through time, should lose its form but remain living nevertheless?

A directly relevant example, much used in recent philosophical discussion, is that of a dog named 'Rover', which, owing to certain cosmic factors, undergoes an extraordinary transformation that reaches far beyond ordinary biological metamorphosis, and turns into an amorphous mass of living cells. The resulting creature, called 'Clover', is spatiotemporally continuous with Rover, and moreover the two share a common life. Some writers have maintained that since the cells composing Rover and Clover have been functioning without interruption, and since nothing can be said to have died in between, the two are identical (M. Price, 1977, p. 203). Clearly, the purpose of this example is, above all, to undermine kind-essentialism, the view that a thing can exist only under a kind, and can remain identical so long as it belongs to that kind.⁵³ If the story of Rover is a successful counterexample to this view, then it demonstrates *a fortiori* not only that the identity of living beings through time is logically independent of the retention of form, but also that spatiotemporal continuity is not sufficient for the retention of form. Although I agree with the second, I shall reject the first of these two consequences. I shall hold that the case of survival described just now is one in which the identity of the living being is lost, and that since this is a situation in which (in spite of there being spatiotemporal continuity) form too is lost, loss of identity owes itself to loss of form. Thus my point will be that there is

⁵³ Views defended by Wiggins, 1980. The attack is particularly upon what Wiggins specifies as D(ii).

a sense in which continuity of form is a necessary condition of the identity of living beings through time.

In Clover we encounter something that runs against the general natural development of living beings. Not only is Clover not a dog, by the facts we know, it is also beyond anything a living being on Earth can naturally transform into. That Clover is not a dog or any earthly living being needs no further argument. If it lives it lives not on the basis of natural laws of life. Hence that Clover lives is no basis for identifying it with Rover (Brody, 1980, p. 77). A zombie said to keep on living on 'unnatural' principles is not identical with the living being it is spatiotemporally and formally continuous with. The task, therefore, is to draw a formal limit for existence in harmony with (and dependent upon) known empirical generalities. With this purpose, I will try to get a more precise characterization of continuity of form. Ask this: what is it that is lost in the cases of the chunk of bronze and of Clover, but not in the case of a tadpole undergoing metamorphosis? What is it that determines the limits of the continuity of form?

The type of change that occurs in metamorphosis is basically growth, that is, a relatively disproportionate growth taking place in different parts of the body. Such a change does not, however, involve the reshuffling of the parts. I submit that this reshuffling, just like their disassembly, destroys all continuity of form, and while the latter does not retain spatiotemporal continuity, the former does. Whatever the dimensions of growth of the existing parts, or the elimination of some of them, or the generation of new parts, what seems true of metamorphosis is that the existing parts of the body continuous with those of an earlier stage are linked or attached according to the same basic plan: for example, given that the head attaches to that particular end of the spinal column, under no metamorphic change does it migrate so as to flank it.⁵⁴ A living being is a functionally organized system, each vital part of which makes a specialized contribution to the whole, and in return is sustained by the whole. This makes every basic part of the system mutually dependent upon all the others, where the proper functioning of each depends upon the proper

⁵⁴ Neither metamorphosis nor the development of the fetus involves the relative shift of parts of the body. Unicellular creatures, too, are structured and have various specialized parts that remain in the same relative position during their lifespan: under no transformational circumstances do the nucleus and the outer membrane of an amoeba change places.

functioning of the rest. Functional organization determines the structural organization of the system, and this in turn determines the fundamental spatial relation between the vital parts. Since every vital part thus has a basic spatial position relative to others, the limits of change in metamorphosis are therefore similarly marked out by the functional organization of the system. It follows that the basic spatial arrangement of the vital parts is a necessary condition for the life of an organism, and such a plan does not exclude metamorphic changes that do not violate it.

Let us say that an earlier and a later stage of a spatiotemporally continuous body are *f*-related if and only if the functionally specialized structural parts of the later stage spatiotemporally continuous with parts constituting the earlier stage are joined according to the same plan as those of the previous one – whatever new or additional material parts may have been gained, and however relatively disproportionate the growth of such parts may have been. We may now characterize the continuity of form: a spatiotemporally continuous body will be said to be continuous in form over a certain stretch of time if either its stages bordering this period are *f*-related or there is a third stage between them, to which each is *f*-related.⁵⁵ Continuity of form is less rigid than the sameness of form-token which gives the identity of artifacts. This is because the former embodies a deep *structure* ensuring the existence of the *f*-relation, and hence can withstand considerable formal alteration. Living beings possess a nature that makes the configuration of their parts more than a mere spatial relation. I will explain this aspect in chapter 7 by appeal to structural properties.⁵⁶

Returning now to Rover and Clover, it is evident that the two are not continuous in form as this is characterized above, let alone that there are no continuous parts between the two, to be joined according to the same plan. There is not even a basis for speaking

⁵⁵ By establishing the *f*-relation on the basis of continuous parts, we allow the elimination of certain parts – supposing they lost their function and were dropped or reabsorbed, e.g., as in the tadpole's tail – along with the growth of totally new parts.

⁵⁶ According to Aristotle, only a living being, and not an artifact, possesses substantial form. See *Metaphysics*, vii, 10, 17. See also Scaltsas, 1990, pp. 587–9. A notion corresponding to the *f*-relation of the functional parts of an organism was repeatedly emphasized in late antiquity. Sorabji argues (1988, chapter 12) that ancient thinkers had generalized the essential configuration of the functional parts of living beings in the form of a theory of natural place for elements in the cosmos. Sorabji quotes Theophrastus (p. 203), Damascius, Simplicius (p. 207), and Philoponus (p. 212).

about the existence of any distinct functional part in Clover. Claiming the identity of Rover and Clover is tantamount to treating spatiotemporal continuity and the continuity of life as being together sufficient for identity, without regarding the continuity of form as a necessary condition constituting part of this sufficiency. As I have urged above, however, it becomes highly dubious that these two entities share the same life; if Clover lives, it lives on a different principle from that of Rover, and this is *not* 'living' in the sense that organisms of its size are said to live in our world. Rover lives as an organized system where the full and harmonious functioning of each of the specialized parts and of the whole is necessary, but Clover possesses none of these. As empirical facts are as they are, we are not free to dissociate the notion of life from the functional organization of a living system, and the loss of form here amounts to the loss of all vital functions. Rover and Clover fail to be identical, because they are not continuous in form.

I propose survival in a formally continuous body under a kind as a sufficient condition for the identity of living beings through time. By 'survival' I understand the continuation of the same life as founded on the same natural principles. The specification of a sortal term sets the limits of empirically allowable transformations that preserve formal continuity.⁵⁷ On the other hand, the continuity of form is a necessary condition in cases involving spatiotemporal continuity. It may be asked whether it is not empirically possible to dismember and reassemble organisms while keeping them alive. I submit that if there is an intuition affirming that such a restored organism would be identical with the original, this is with reference to a different concept of identity, namely C-identity. As applied to living entities, rearranging the same functionally continuous parts according to the same plan and making them function together as a whole organism is all that is required here. M-identity, on the other hand, will accept nothing less than the continuity of form. The difference between the two, once again, concerns whether or not we allow the original constitution to be decisive.

This far in the present study a main purpose has been to disentangle substance from some empirically opaque aspects traditionally attrib-

⁵⁷ The *infima species* has to be specified in order to exclude strange (and unnatural) cases of growth which involve the transformation of, for example, a cat into the constitution and form of a dog (or a human being into a gorilla). I am not suggesting that such changes are conceptually impossible. See Lowe, 1989, p. 103.

Object and property

uted to it. For this I have offered purely qualitative, formal accounts of the individuation and identity of objects. I have preserved the primacy of substance, however, buttressing it with the Aristotelian Benign Doctrine of the Substratum, or the principle of inherence, connecting both property with object and object with material constitution. I have been trying to prepare grounds for an approach treating an object as a bundle of properties existing at a position in space and time, one where each property is physically dependent upon the object in the way required by the Substance View. According to this approach the persistence of an object is ensured by its retaining the original configurative order of a sub-cluster of the complete compresence that makes it up. The tasks that remain to be fulfilled include the following: first, I will argue that properties are dependent particulars. Second, I will try to develop an account of the way properties hold together in compresences, thus explaining the fact of inherence itself. This will complete the sketch of a theory of objecthood as a 'bundle-substance', setting forth a properly qualified qualitative account. Third, I will offer an explanation of essences as particular but complex properties, and finally extend this to include causation.

I close the chapter by highlighting some other ideas that have emerged here. As Aristotle argues, some permanence is indeed necessary for there to be change. Unlike a certain interpretation of him, however, I cannot see this permanence as something that resides in the substratum conceived in the sense of matter. Rather, I have defended the view that the necessary degree of permanence buttressing change is found in the formal aspect of objecthood, and that such an aspect is in the particular essence of the object. Furthermore, though I grant that matter exists in quantities which, as such, are not objects I do not regard such a thing as constituting a category more fundamental than objecthood. A quantity of matter is in the composition of any object, but this does not make it independent of or unanalysable in terms of objecthood. Such quanta are particulars, and they either exist as forming bodies or, as collections, they are formed out of bodies.

6

Properties, particularity and objecthood

6.1 INTRODUCTORY: REALISM AND NOMINALISM

The world appears full of repetitions, everywhere. The great variety in existence seems to be made out of the recurrence of a much less diversified plurality of constitutive principles: interpenetrating properties recombine in an indefinitely great multitude of ways, forming our physical universe of objects. Thus the world consists of a qualitative manifold, the elements of which exist in substantial concretions only, making objects the ultimate units of physical reality.

The repetitive aspect of the qualitative manifold involves much more than a mere recurrence of qualities themselves; spatial and temporal relations between substances and changes in them are to be cited as well. Moreover, another consequence of the repetitive aspect is the remarkable orderliness of the world. In compresences distributed through space, qualities form recurrent complex patterns: this is what we recognize as the diversity of kinds. Through time, on the other hand, patterns of succession manifest what we record as lawful regularities. If such ubiquitous repetition is an objective fact, the logical implication is that properties, relations and kinds apply multiply; they each exist simultaneously, in a great multiplicity of compresences. Each severally present existence is one and the same thing exemplifying itself in an indefinitely large number of objects. It is, in other words, an identity in a plurality, or what is called a 'universal'. Accordingly, the property green is a universal, as it occurs both on this leaf and on that curtain, and every such occurrence is an instantiation or a token of that very same type.

There is a philosophical tendency which disagrees with such a depiction. Accordingly, the fact that properties recur is specious. While repetition presupposes identity, properties distributed through the world are very seldom indiscernible. In nature, even a

property instance borne by the same substance fails to be uniform. The colour, warmth or hardness of the same thing may look uniform at first sight, but on closer inspection they reveal variation. In connection with properties inhering in different substances such a variety can be even greater. Thus, since different property instances fail to be identical, they are not repetitions as they stand. The true relation holding amongst substances is *resemblance* in diverse degrees. For classification, the mind constructs concepts by *treating* resemblances as identities. Concepts of properties are indeed universal, for they apply to a multiplicity, but then, ontically, they depend on the mind. Resemblance in different degrees holds objectively between qualities, and derivatively between objects in which qualities inhere. Such a view, available since Boethius, was developed by Locke into a more explicit version (Boethius, 1957, p. 97).

The debate over the ontic status of principles such as properties, relations, and kinds frequently took the form of a dispute between realism with respect to universals and a form of what has been called 'nominalism', namely the view that rejects the objectivity of universals. The former position has already been summarized: it proclaims that properties, relations and kinds are identities among multiplicities of objects. Plato invented it, but since this philosopher regarded universals as the ingredients of a transcendent reality, his version is a polar position. Accordingly, universals are said to be distinct from their instantiations, in the sense of being independent of the objects bearing such instantiations. Universals are not found in the world of our perceptual acquaintance, over and above their instantiations; they are said to reside in a medium beyond it. For Plato they are the fundamental reality; their instantiations are mere imitations that partake in them. This account has been accused of unduly multiplying ontology, generating new entities out of old ones.¹ Stated strictly, nominalism proclaims that universals – and even their instantiations – are mere words or names, for objects are the world's sole ingredients. Such an unqualified version makes not only the so-called 'universals', but even properties, relations, and kinds, dependent upon the mind. It is interesting that nominalism was first explicitly formulated (and then, of course immediately

¹ For a discussion of Plato's transcendent realism see Armstrong, 1978a, chapter 7, and 1989, p. 76.

rejected) by Plato himself.² In the Middle Ages, this view was propounded by Roscelin at a time which coincides with the recovery in Western Europe of the *Timaeus* (but see Boethius, 1957, p. 97). At that stage Aristotle's weaker but highly plausible version of realism had not yet been made directly available to medieval thinkers. The translations of Aristotle's treatises concerning physics and first philosophy became available around the middle of the twelfth century. This roughly coincides with the death of Abailard, who, in discussing the work of Boethius, had formulated views quite similar to those of Aristotle (Abailard, 1957, pp. 208–58).

Aristotle followed Plato in believing that universals are identities in diverse particulars, but claimed that they exist *in rebus*, that is to say, within particular things, hence making them dependent upon objects. Although this is quite different from the extreme thesis that universals are entities separate from particular things, it still remains sharply opposed to the claim that they depend for their existence upon the mind. Thus instead of overpopulating the world Aristotle's account overpopulates the individual thing. 'Conceptualism', a milder form of nominalism, the crudest form of which was mentioned above, is the principal historical rival of realism, and sees universal properties, relations and kinds as concepts created by the mind for classifying and ordering the world. Such a position is not committed to a full-fledged nominalism, and versions of it coupled with mild realistic theses are found in the ontologies of both Abailard and Locke.

I believe that properties, relations and kinds are *real, but not universal*. One of the two rival positions I have contrasted at the outset, namely, that particular properties in the world are mutually related by nothing closer than resemblance, claims just that. It maintains that the so-called universals are creations of the mind that result from summarizing and grouping such objective resemblances. Hence my position is a combination of conceptualism and a realism of particular resembling properties. It is not so much my intention, however, to press the conceptualistic aspect of this doctrine, and I will restrict my purpose to defending the thesis that objective properties are particular. In my general argument the truth of conceptualism will not occur as a premise; it will be adopted as a consequent account explaining the intersubjective nature of universals. Nevertheless I owe at least an

² 'Are those intelligible forms, of which we are accustomed to speak, nothing at all and only a name?' *Timaeus*, 51C.

assessment of some of the principal arguments levelled against it. Such an exercise will enable me to put in better focus the way in which my Lockean compound account differs from a cruder form of conceptualism.

Two interrelated criticisms still widely used in our day (see Armstrong, 1978a, pp. 17–18, 21, 27; 1989, p. 11; Grossmann, 1992, p. 37) are directed to conceptualism simpliciter, i.e., to the position maintaining that for an object to be *F* is no more and no less than that object's falling under the concept *F*. Accordingly, this sheet of paper is white if and only if the concept white applies to it. Such a pure and unqualified version of conceptualism diverges from what I defend here, for it leaves no room for the idea that our universal concepts are based on objective resemblances. In fact this purer version of conceptualism has the notable disadvantage of subjectivizing not only universals but property instances as well, which we ordinarily assume to exist in objects (see Campbell, 1990, p. 27). Thus accordingly not only is whiteness, as an aspect common to every white thing, a concept; the white of this sheet of paper and the white of that piece of chalk, too, are nothing but the applicability of a concept to these objects. It follows for the purer version that neither the universal white nor its instances in objects are objective; in the world neither can be said to exist. The two criticisms I am in the course of introducing exploit this weakness of conceptualism. One of them begins by noting that a world in which the concept 'white' does not exist should be a logical possibility. After all, it is not necessary that the concept white exists. For example, human beings themselves might not have come into being. But then it does not seem to be a necessity that the concept white should exist for chalk to be the colour it is, since such a substance would be as it is even if there were no humans classifying it. Being white, therefore, may not be merely a matter concerning the applicability of a concept to particular things. A property must have an extra-mental basis.

The second criticism enhances the conclusion of the first by pointing out that, however numerous, our concepts cannot be as varied as the salient features of the universe. Do we not keep on discovering new things? It seems very possible, therefore, that there are properties which are not yet discovered by the human race. If the crude version of conceptualism were true, such a discovery ought not to be possible. On its own, the common conclusion of these

criticisms, namely, that our concepts of properties must have extra-mental bases, does not establish a realism of universals. Many philosophers, with whom I find myself in agreement, will reject the latter doctrine, while they acknowledge the conclusion. The rationale of such a position is in the tenet that the objective bases of universal concepts are property instances, or particular properties that inhere in concrete things.

David Armstrong has offered two other criticisms of conceptualism (1978a, pp. 19–20, 22–3, 27). To state it briefly, one of these begins by concentrating on the very characterization of conceptualism. Accordingly if for some entity to be an F is for that entity to fall under the concept F, then for a number of concrete things to be white, for example, is for all these objects to fall under the concept white. Armstrong points out that even this simplest enunciation of conceptualism tacitly presupposes two universals one of which is the concept itself. As explained earlier, this much is no threat to an approach which maintains that all universality is mind-dependent, without denying the existence of any such thing outright. The other universal the characterization of conceptualism is said to presuppose is introduced as follows: given that objects are said to be white if and only if they each fall under the concept 'white', there arises a question concerning the nature of the relation of 'falling under'. If each object is related to the concept by this (same) relation, then the latter cannot be a token or a particular (there being several individuals, there would have to be as many token relations linking each to the concept), and it must be the same type that links the concept with these individuals. Hence the relation of 'falling under' conceptualism appeals to is a universal. The argument continues that since, from the point of view of conceptualism, universals are subject to analysis that reduces them to the applicability of a concept, the very notion of 'falling under' (shown to be a universal itself) within the analysis of any universal calls for being analysed, and as can be seen such a requirement reproduces itself *ad infinitum*, creating a vicious regress. The final criticism concerns causation. If causation exists in nature independently of us and of the classifications we make, then conceptualism must be false, for 'what causes what depends solely on the properties of things'.

I accept both the premises and the conclusions of these arguments. As I have remarked above, they are directed to a 'pure' conceptualism,

and they indeed refute this view. As such, however, they do not scathe a more sophisticated compound version, which declares that property concepts have their objective bases in things, and more specifically in particular properties that mutually resemble. According to such a view things are not at all said to be white in virtue of their being classified under the concept 'white'. It is because, objectively, they bear certain particular properties the resemblances of which the mind conceptualizes as white. In explaining what it is for things to bear their properties the present compound version of conceptualism does not appeal, therefore, to the relation-type 'falling under', or (arguably) to any other universal. Moreover, it does not have to deny the objectivity of causation, for it regards properties as aspects existing in concrete things. Acknowledging the objectivity of properties, and so recognizing that causation is independent of the mind, is not thereby to recognize that causation entails objectively universal properties. Having set forth such a thesis, however, the present approach owes now a particularistic account of causation, and this will be supplied in the final chapter. Next, I expound Locke's compound conceptualism, which gets its objective foundation in resemblances said to exist in nature. I will gradually develop a particularism of properties I find inherent in such a view.

6.2 THE THESIS OF RESEMBLANCE

Locke opines that the meanings of general terms are general ideas obtained by abstraction and that 'all things that exist are only particulars' (1961, vol. 2, p. 17). Accordingly, abstraction is sustained by 'the common agreements of shape and several other qualities' of things (p. 17). He envisages these common agreements as 'resemblances', and affirms that 'nature, in the production of things makes several of them alike' and that 'the *sorting* of them under names is the *workmanship of the understanding, taking occasion, from the similitude* it observes amongst them' (p. 21). As an epistemology of the way the mind produces general terms and notions, Locke's conceptualism is founded upon the Thesis of Resemblance, which operates at the ontological level. In his philosophy, these two theoretical components are the complementary stages of a single coherent account of properties (see H. H. Price, 1953, pp. 13, 18).

As I indicated earlier, to see the point of the Thesis of Resemblance,

all we need to do is to compare properties more closely. It will emerge as an empirical fact that the world is populated by particular properties related by resemblance rather than identity. For example, magnifying every occurrence of the letter 'a' on this page will reveal that no two of them are wholly identical in shape. Aristotelian realism is a simplification, a summary of the actually more complex relation that holds between particulars: on this latter account, whatever their degrees all resemblances are reduced to identities. This allows a practical and easy classification of the world, but it also invites the nominalist revolt. Assuming universal existences identical in different things, it holds that although such things do not have objective reality independent of particulars, they are nevertheless treated as part of reality, and, as nominalists have claimed, this involves making several entities out of the same ones (see Goodman, 1956, p. 18).

The Thesis of Resemblance could be interpreted as embodying the idea that whatever the world may be in itself, it is the human mind and perceptual mechanism that experiences it in the form of a network of resembling bodies and classifies it accordingly. On this interpretation, we see resemblances amongst things because of the biological (or Kantian) make-up of our perceptual apparatus. But this construal leads to a rather strong nominalist point of view to which I am not committed at all. The world is so constituted that in it there are objective resemblances between particulars. My interpretation of Locke, which I also adopt as my own position, is a realism of properties which does not extend to universals. Properties, kinds and their similarities can be granted extra-mental reality without this entailing that these exist identically in different particulars.

6.2.1 Resemblance, respects and identity

Appearance is not always faithful to reality. Perhaps the empirical fact of resemblance is only apparent, and consequently any account of properties appealing to it is in a position to assume the identities concealed behind resemblances. A principal objection along these lines has been that the Thesis of Resemblance presupposes identities implicitly, and therefore reduces to Aristotle's account of universals, because on analysis resemblance itself resolves to identity. For two things to resemble one another is for them to possess a common

feature.³ It is argued that an object may resemble other objects which do not, among themselves, possess a noteworthy similarity. For instance, a blue ball resembles both a blue wall and a white ball. In such cases merely stating that there is a resemblance between objects will not distinguish one property from the other, and the different *respects* in which the objects resemble one another have to be mentioned.⁴ But this amounts to mentioning universals; for the respects one thus singles out are nothing but respects of identity. Hence accounting for differences between properties forces the Thesis of Resemblance to appeal to universals.

According to some advocates of Locke's theory of properties, that we cannot express different resemblances unless we mention the respects in which these resemblances are different is a matter that has to do with our ability to specify relations, and is, therefore, a matter of cognitive achievement. These philosophers hold that our inability to discern resemblances without mentioning respects cannot by itself demonstrate that, in fact, these respects are not resemblances but rather identities between objects (Jones, 1951, p. 557). We specify and distinguish resemblances by mentioning respects, but from the point of view of the Thesis of Resemblance the latter are simply general terms and concepts, hence products of the understanding (see Bochenski, 1956, pp. 46ff.; Armstrong, 1978b, pp. 96–7). The success of the criticism depends, therefore, on the acceptability of the logical move from the respects of resemblance to universals, and merely assuming such a thing would beg the question.

I agree that this point is essentially correct, but feel that it should be made more forcefully, without invoking the subjective facts of recognition and concept formation. From the point of view of the present approach I see no threat in granting the existence of *objective respects of resemblance*. Once we declare that particular properties are objective, and that between them they resemble in the same sense of

³ Quinton, 1973, p. 23, and Bochenski, 1956, pp. 50, 51. For an objection from the possibility of a world made of a single entity, see Gracia, 1988, p. 77. Gracia acknowledges that the similarity of properties would still arise among the parts of an individual object. Armstrong addresses the same objection, 1989, p. 46.

⁴ Jones, 1951, p. 554; Armstrong, 1978a, p. 45; Campbell, 1990, p. 33. The origin of this type of argument is Goodman's so-called objection from 'imperfect community', 1966, p. 148. For the claim that similarity is an incomplete predicate see Hampshire, 1950, p. 238. For the use of this idea from the point of view of nominalism see Butchvarov, 1966, pp. 33ff.

objectivity, it seems natural that we also allow objective respects of resemblance; though not necessarily, we may regard these as higher-order similarities. In our example, the resemblance between the blue ball and the blue wall is not similar to the likeness between the blue and white balls. *Pace* Russell, appeal to higher-order resemblances (i.e., resemblances of resemblances) is harmless to particularism.⁵ In 6.2.3, I will show that the recognition of respects of similarity does not entail invoking universals.⁶ For the realist of universals to have an argument out of objective respects of resemblance, it must be demonstrated, *in addition*, that any such respect is in fact a respect of identity. This crucial extra requirement has often been overlooked, and philosophers have been prone to take it for granted. Goodman is one example:

If two things are similar they are similar in some 'respect' – i.e., they have a common quality. When, however, we say that more than two things are all similar *in one respect* we are in effect saying not only that each two are similar but also that some 'respect' in which any two are similar is the same in which any other two are similar. In other words we are saying that every two members of the class have in common some quality that every other two members have, and this amounts to saying that all members of the class have a common quality. (1966, p. 148)

Surely, 'similar in a respect' does not *mean* 'identical in a respect' or 'possessing a common respect'. Perhaps such a blunt inference tacitly assumes Russell's thesis that resemblance itself is a universal. There is reason, however, for regarding this thesis as ill founded, and I will devote a section to its discussion. But are there not other grounds upon which a respect of resemblance can be said to entail a respect of

⁵ Cf. Russell, 1912, pp. 96–7. See also Armstrong, 1989, pp. 53ff.; Campbell, 1990, p. 38. Clearly, a higher-order resemblance does not have to be a universal. Suppose we have four colour patches, two of which are the tones of yellow and the other two the hues of orange. We can say that the former and the latter pairs resemble among themselves. Moreover, in contrast with a pair of blue patches (which among themselves are similar) the two former pairs form a resemblance. But this 'resemblance of resemblances' does not entail the existence of a single entity that is instantiated multiply. Here, we have mentioned six particular patches of quality, and four particular relations of resemblance. The resemblance of two resemblances is a particular relation, just as the resemblance of two particular qualities is.

⁶ The existence of objective respects of resemblance, in the sense of different resemblance relations between objects, does not entail that these are identities. In a different way, Price, 1953, pp. 23–6, shows that higher-order resemblances do threaten a view that refuses to admit the objectivity of universals.

identity? Indeed, contemporary philosophy has devised a number of analyses of resemblance in terms of identity.

Of the numerous methods by which attempts have been made to explain the resemblance of properties in terms of identity, none has proven, I believe, to be satisfactory.⁷ Nevertheless, the most promising amongst them is the proposal that any relation of resemblance is in effect a relation of *partial identity*. In what follows I will offer a critical treatment of how such an enterprise interprets 'respects of resemblance' in favour of a realism of universals. First, however, the partial identity view needs to be distinguished from another 'universalistic' analysis of similarity. This latter begins with the observation that just like substances, properties themselves bear higher-order properties. For example, in this sense we say of red and blue that they are colours, or of triangularity and circularity that they are shapes. The very fact that objects and their properties bear resemblances in different respects implies higher-order properties, in the form of determinables, and such determinables are universals. This account may allow that as instantiations determinate properties are related by irreducible relations of resemblance. Hence it does not purport to present an analysis of resemblance. Its principal claim, however, is that such facts of resemblance and their differences imply determinable universals.

We do not find here an argument that would justify the inference of universal (higher-order) properties from respects of (higher-order) resemblances. For one thing, this account does not give satisfactory reasons why we should think that a respect of resemblance is a higher-order universal, rather than a higher-order resemblance. Even if we skip this crucial issue for the sake of argument, we see that the view presented is quite difficult to hold. As Armstrong points out (1978b, p. 106) there is first a difficulty embedded in the logic of stating that properties *bear* properties, for ordinary language does not seem to permit forms such as 'Red is coloured' or 'Red has colour'. Instead, the proper thing to say seems to be that red is a member of the class of colours, i.e., that red *is* a colour. Thus according to these linguistic indications, resemblances will be said to differ in respects not by their relata bearing different higher-order properties, but merely by their falling within different classes. Then it is not clear at all that, by itself, the case should invite a realism of universals.

⁷ For a discussion of various such methods and their shortcomings see Armstrong, 1978b, chapter 21, and 1989, pp. 103ff.

Second, Armstrong remarks that 'not only does *redness* resemble the other colours in being a colour, it also differs from them in colour. *Redness* and *blueness* differ as colours. The property in which they are supposed to resemble each other is the very thing in which they differ' (p. 106). It follows that the explanation under scrutiny cannot even maintain consistently that a respect of resemblance implies a certain higher-order *common* property, for if there is such a higher-order property then it is a principle of difference as much as it is a principle of identity. Third, if such a position is not to take refuge in the vagueness of determinables, i.e., in the non-specific character of principles such as shape, hardness, colour, etc., it will have to state precisely the respects of higher-order common property which the respects of resemblance allegedly imply.⁸ As will be seen, however, in connection with the partial identity analysis of resemblances, such a specification may prove to be a formidably difficult task, lending no guarantee that resemblance classes are marked by common features and not 'family resemblances'.

Now for the approach that analyses resemblance as a partial identity. First let us ask: what is partial identity? By this philosophers understand something like identity infused with impurities: theoretically, by purifying such a relation from the residues it contains we would obtain sheer identity. On this account, two things of different shades of blue resemble, for the difference in hue is due to impurities involved in the instances of blue inhering in these things. Mentioning the respect is citing the (common) property behind the impurity, and is, therefore, mentioning an identity. There is reason for supposing that Locke himself understood resemblance as a partial identity, for he thinks that degrees of resemblance between particulars depend upon the extent of qualitative identity. This construal will indeed reduce the realistic treatment of resemblances to an Aristotelian realism. What has been just described is not, however, the only way: Hume, for example, treats resemblance as a philosophical primitive. He sees it as being as basic as identity, and therefore irreducible to the latter. According to him, resemblance cannot be reduced to partial identity, for among other things, it holds between simple qualities of colours: '*Blue* and *green* are different simple ideas but are more resembling than *blue* and *scarlet*; tho' their perfect simplicity excludes all possibility of

⁸ Even Armstrong, 1978b, pp. 117ff., a realist of universals, does not think that determinables can be *real* properties.

separation and distinction' (1969, p. 67). Unfortunately, this method does not yield on its own a totally safe argument, even on the phenomenal plane.⁹

6.2.2 Resemblance and partial identity

Through his work published over the last two decades, David Armstrong has contributed extensively to our understanding of the ontology of properties. Armstrong defends a mild Aristotelian realism of universals. In his view the particularism of properties as sustained by the Resemblance Thesis is the principal alternative to his own position (1989, pp. 135–9). The methodology through which he criticizes the Thesis of Resemblance involves demonstrating that any specific resemblance is a partial identity. With this purpose, he maintains that the seemingly irreducible properties said to constitute the relata of resemblances are in fact structurally complex universals (1978b, part 6; 1989, pp. 102ff.). Armstrong offers a sharper characterization of partial identity. According to him, two things are partially identical either if one is part of the other or if the two overlap (1989, pp. 37–8), that is, the two are as P is to (P and Q) or (P and Q) is to (Q and R). Besides, overlap may also be understood as having structurally constitutive parts in common:

The notion of partial identity is of immense importance and value in solving problems in the theory of universals. It seems that it can be extended to what will be called 'structural' properties. Suppose that there is a property, O, which is a matter of a part of the thing which is O having property P and standing in a relation of the sort R to the remainder of the thing which is O, a remainder which has the property Q. This is a structural property. P, Q, and R are all parts of this property in the usual sense of 'part'. (1989, p. 38)

Since on Armstrong's characterization two properties can be partially identical only if at least one of them is made up of parts (1989, p. 212), and moreover the showing that resemblance is a partial identity requires that there exist not a single similarity that resists analysis (1989 p. 95), at least one term of all resemblance must be a complex property. This is

⁹ Though he argues that the resemblance of colours can be analysed in terms of partial identity, Armstrong grants that phenomenally colours are irreducible: 1978b, p. 125. There is, however, reason for regarding the simplicity of colours as a debatable matter. For scientific and philosophical material casting doubt upon the simplicity of colours see Hardin, 1988, pp. 42ff.; Westphal, 1987, chapter 8.

very difficult to establish unless one advances the sweeping thesis that all properties are complex. However, Armstrong affirms the latter only as a possibility (1989, pp. 68, 71, and 125). Moreover, even if all properties were complex it would not automatically follow that resemblance between any two is a matter of identity: two resembling complexes don't have to have a common part.

Let us assume that in what follows 'universal' means 'property': Armstrong maintains that the reduction follows because 'The resemblances of universals ... admit of degree. This degree has an upper limit in *exact resemblance* ... [which] can be nothing but *identity*' (1978b, pp. 109–10, and p. 120. See also 1989, pp. 103ff.). He seems to infer this in the following manner: if resemblance is a matter of degree and if exact resemblance, viewed as the limit of this gradual convergence, is identity, then any degree of resemblance below exact similarity will be a partial identity. This won't do, however. Even if, for the sake of argument, we grant that exact resemblance is identity, and all properties are complex, it may still be that resemblance is not a partial identity. It is logically possible that resemblance to a degree is not due to there being any common structural parts in the complex relata. Structural parts may resemble each other without having anything in common, and converge to identity only when they attain exact resemblance. That resemblance should thus converge at one extreme to identity does not logically guarantee that when there is resemblance only to a degree this is partial identity, even if we conceive of the convergence as a limit.

Moreover, I think the reason Armstrong offers begs the question. In order for resemblance to be a partial identity, the limit of resemblance, that is, exact similarity, must be identity. This rules that things cannot be exactly similar without being identical. The reason can be offered, therefore, on condition that exact similarity is *assumed* to be identity. Such an assumption entails, however, that any account not making use of universals, that is, of principles that exist in multiplicity, is obliged to say that resembling particular aspects of things are *different*, as well as spatiotemporally *distinct*. Since, accordingly, the resembling particular properties of two objects cannot be identical, neither can they bear exact similarity; by logical necessity no two particular properties in this world could be exactly similar. Thus, given Armstrong's reason, any realism of particular properties is debarred *a priori* from saying that two objects resemble by bearing

exactly resembling aspects, such as possessing exactly resembling shapes. But such a thing commits these views to absurdity by assumption, and thus begs the question.¹⁰

Empirically, likenesses between aspects of objects range from distant similarities to those indistinguishably close. It must be granted that there is exact resemblance at one end of the scale. Tearing a uniformly coloured sheet of paper into pieces illustrates the point. Even if on closer inspection the resulting particular colours reveal differences, they still indicate that exact similarity is possible, and common sense treats them as indiscernible. In everyday language we describe such things as 'bearing the same colour'. The sameness is conceptual, however, and the case involves particular patches that are distinct. Realism of particular properties will not judge this to be identity in different things.

I wish to dwell on this point a little longer. Ordinarily, when we say of things that they are identical we either mean that they are one and the same or that they are indiscernible. When we mean the former what we say entails that there is neither difference nor distinctness between the items concerned. The latter, however, does not entail indistinctness; it is only non-difference. Hence in the sense of indiscernibility or exact similarity, something can be identical with itself and also with entities at different positions. Clearly, the latter sense cannot entail the former. Speaking of the 'identity' of property instantiations *in different objects*, we ought *not* to be intending the former sense, i.e., numerical identity. In supplementing, however, the distinct property instances in different substances by numerically identical universals, immanent realism is doing something difficult to comprehend. It stipulates a specialized philosophical concept of 'numerical identity in a diversity', purely for the purpose of making sense of universals *in rebus*. With such a notion at hand it becomes possible to say that one and the same universal is multiply located in several things at once, or that one does not destroy a universal by destroying an instantiation containing it, that is, by destroying something identical with it. No doubt immanent realism needs the

¹⁰ Compare the assumption with Williams' observation that 'particular entities are those which do not conform to the principle of identity of indiscernibles ... particulars are entities which may be exactly similar and yet not only distinct but discrete', where by 'particulars' Williams means objects or properties (1986, p. 3). See also Butchvarov, 1966, p. 8; Armstrong, 1989, pp. 105–6.

stipulation vitally, in order to buttress its *own* ontology. Assuming with Plato that universals are objective, but unlike him refusing to place such things outside the manifest world, immanent realism is committed to maintaining that universals are in things themselves. But as a consequence of a world of plurality, the same universal is to be said to exist in several things at once, in addition to its being instantiated in them (*Parmenides* 127–30). But then immanent realism insists on criticizing the Thesis of Resemblance on the basis of its own stipulated notion of identity. This has the air of what one may call ‘philosophical colonialism’. Immanent realism tries to impose a concept of identity tailored to its own survival upon ontologies that do not include universals in their account of properties.

Finally, I will point out a self-defeating consequence of assuming that exact similarities are identities. Let me use again an example from colours, not because these are among the clearest paradigms of objective properties, but above all because they are easier to imagine. The point is meant to apply to all determinate properties. Consider the fact that under a certain determinate colour there are a great many discriminable hues.¹¹ Furthermore, for each such discriminable hue it is possible to obtain pairs of objects which instantiate it in exact similarity. To be sure, the shades – and therefore the pairs of instantiation – form a set of resemblance under a respect. Given Armstrong’s assumption, however, this set does not yield a single universal. Since on his assumption every exact similarity is an identity and every identity in a plurality is a universal, it follows that every pair of objects instantiates a different universal. Every pair of objects instantiates a different universal, for what each pair instantiates is *closely* similar to what other pairs instantiate, but not *exactly* similar to them. The absurd consequence entailed by this is that on Armstrong’s theory there are as many universals as there are specific differences under any determinable. Every different length from the minutest to the longest, every different weight, every different hardness, shape, etc. is a different universal. No one will disagree that every such different thing is a property; but that each is a universal seems an excessive claim. As a matter of fact, this is a consequence recognized by Armstrong himself, though he does not seem to find it absurd (1978b, pp. 117–18). What is more, Armstrong repudiates disjunctive

¹¹ Of course, relative to the colour each different hue is a determinate, and relative to its shades the colour is a determinable.

properties. 'Comprehensive' universals are not therefore possible for him on such grounds.¹² Looking for partial identities between the specific identities themselves appears to be the obvious way out, but such identities are likely to resist being disclosed. The task here involves the attempt to capture something common between hues that are already as specific as they can be, or between lengths of any variety, including the indefinitely small . . .

At this point a question arises: if the situation is as described, what are we to make of 'partial identity'? A partial identity account of resembling properties serves a purpose if it can show and explain that every different property instantiation falling under the same respect of resemblance falls in fact, along with every other property which it resembles, under a single identical universal (in varying impurity). But which single universal? For every pair of resembling properties it seems possible to introduce properties that are exact resemblances of each of the resembling items, and thereby to defeat any tentative proposal which involves the positing of a single identity to which other resembling properties would be said to converge. It transpires that on the partial identity account, rather than there being a universal for every determinable property, there is a different universal for every specific difference, and therefore no universal that unites the multiplicity of properties which resemble in a certain respect. The resemblance of properties has not been explained successfully, after all, as partial identities of universals. Armstrong's theory has led to a continuum of specific resembling universals.¹³

For a final rebuttal of the general argument from respects, I return to its initial premise. It was said that since things resemble one another in different ways, a theory of properties should account for such differences and make relevant discriminations. For the Thesis of Resemblance this presents no difficulty, since it grants the objectivity of particular properties.¹⁴ There are different objective resemblances which we can

¹² 1978a, pp. 23ff. It is interesting that Mellor too, 1991, pp. 180–1, argues that 'there need be no one property that all red things share'. From this Mellor draws a very different conclusion, however.

¹³ Armstrong, 1978b, p. 122, says that 'lengths (the universals) contain lesser lengths, that is, stand to the lesser lengths as whole to part. This fact constitutes the unity of the class of lengths.' I fail to grasp here *the identity* to which such a thing is said to converge. Are these perhaps *indefinitely small* lengths? Is it desirable to suggest that the unity of the class of a certain type of magnitude is given by a universal effectively of no magnitude?

¹⁴ See Armstrong's distinction between 'layer-cake' and 'blob' theories: 1989, pp. 38, 120. The present approach is of the former kind.

designate by mentioning different respects. How can a view arguing that resemblances are partial identities supply for the same demand?

I think immanent realism is compromised exactly at the point where it attempts to undermine the Thesis of Resemblance. In many cases a certain property can be specified by mentioning the respect of resemblance, where the identity supposed to hold is likely to remain unavailable and unrecognizable even on closer inspection. Specifying the respect of similarity is not the specification of a common identical feature. If similarity is partial identity, mentioning a respect of resemblance is only mentioning a respect of partial identity. Since the latter is an identity infused with other elements, referring to it is not referring to identity, and the aspect of pure identity must lie deeper. Specifying the relevant identity may prove to be highly difficult, and without a guarantee of success, even if it is sought with more sophisticated means than the naked eye. Suppose we speak of resemblances in physiognomic properties: the noses of the sultans of the Ottoman Dynasty are strikingly alike in shape, though not, for instance, in size. If this is partial identity, then which is the feature that persists identically in each of the noses? There is no guarantee that there exists such an identity, for if Wittgenstein is right,¹⁵ there may not even be one aspect common to all the noses. Instead of a single feature conjoining all the noses in the dynasty, it may be that there are several features connecting these disjunctively. It appears that to argue even for the possibility – let alone the proof – of the reduction commits us to a treatment in terms of items of which we lack direct (and at times even indirect) awareness.

I conclude that in the absence of a satisfactory account reducing resemblances to identities, the argument from mentioning respects is ineffective against the realist interpretation of the Thesis of Resemblance.

6.2.3 Russell's objection

Bertrand Russell criticizes the Thesis of Resemblance, calling it regressive, for in explaining away universals it makes implicit appeal to the universality of resemblance (1912, pp. 96–7; see also Armstrong,

¹⁵ Wittgenstein, 1953, part I, 66. Note that the point applies independently of the issue at debate between Bambrough, 1966 and Grandy, 1979. Recently Mellor, 1991, pp. 181–2, has maintained that ‘what Wittgenstein said of the predicate “game” may well be true of every ordinary predicate: no one property is shared by everything it applies to’.

1978a, pp. 54–6): if particulars have many different aspects of similarity, the question arises as to what makes the unity of the class of blue things, for example, as opposed to that of red things. The answer will be that a blue thing has the same resemblance to all other blue things but not to red things. But if what secures the unity is the sameness relation of resemblance applying to a diversity of particular things or properties, in it we have a genuine universal. Russell adds that replacing identity with resemblance between resemblances will not change the position: resembling resemblances will still be universals (see also Armstrong, 1978a, p. 56; 1989, pp. 53ff.; Campbell, 1990, p. 38).

Such an argument works if, in explaining the unity of the class of things with a certain property, the Thesis of Resemblance is indeed forced to appeal to sameness of the relation of resemblance, that is, to a type. But a realism of particular properties is not committed to that. Given the unity of the class of blue things, every blue object indeed resembles every other. Distinguishing the resemblances of blue objects from those of others does not, however, necessitate subsuming these under identity or even under higher-order resemblance. Similarities hold between *particular aspects* of concrete objects. If particular properties inhering in substances are objective but dependent existences, the resemblance of substances is a matter of the resemblance of their particular attributes. If two objects are related by more than one similarity, then the terms of these different similarities are the different aspects of the objects involved, and not merely the unqualified objects themselves.¹⁶ Two blue balls resemble each other in at least two different ways, and they do so in virtue of the different particular aspects they possess. Such aspects correspond to property instantiations in the common terminology of Aristotelian and Platonic realism.

The unity of the class of blue things can be given in terms of the resemblances between *a given aspect of a particular object* and *the particular aspects of different objects*, and this will not be a sameness among diverse things. More specifically, any member of this class has a particular

¹⁶ See Armstrong, 1978b, p. 96, for a similar claim, except the qualification that the resemblance of such aspects will be 'a matter of the resemblance of universals'. Of course, the 'blob/layer-cake' distinction captures the point succinctly: Armstrong, 1989, pp. 117, 120, 135–6. For the particularity of properties see arguments offered in Gracia, 1988, pp. 66, 97ff.

aspect (the blue on it) similar to a particular aspect (the blue on the surface) of every other member. Each object in the class is related to every other by particular resemblances. The unity of the class is thus not grounded upon a sameness of resemblances. It is the sameness of a particular aspect of an arbitrarily chosen member that accounts for the unity.

Universals are introduced as ontologically indispensable explanatory devices. Any argument granting them objective reality is buttressed by the premise that certain crucially important facts of the world cannot possibly be explained without reference to them, and nothing less than such a claim will validate the contention that they exist independently of the mind. Thus, the rejection of universals need not even involve demonstrating their logical incoherence. They will be abandoned if there is an at least equally plausible alternative account of the matter. Ockham's Razor will take charge independently.

Every individual object is characterized by a compresence of a great diversity of particular aspects, which each, in different degrees, resemble aspects of other objects. Such a thing does not entail or presuppose that the particular aspects themselves are *independent* existences. In other words, the present view is significantly different from the tenet that properties are *abstract particulars*, or 'tropes'.¹⁷ Properties constituting the terms of resemblances that pervade the universe are by physical necessity aspects of particular concrete things. Properties inhere in substances and therefore are dependent particulars existing *in rebus*. Unlike Aristotelianism, however, I deny that universals are objective identities among different substances. Thus the present view has two important merits, the first being that its explanation of qualities, kinds, and relations is in terms of the empirically observed fact of resemblance. Second, by restricting existence to particulars, it meets a justified demand of theoretical economy, and allows us to treat attributes objectively, without inviting a nominalist reaction.

¹⁷ As I have discussed earlier, according to this approach, properties are particular, and not necessarily dependent upon substances. Ontologically, properties are given a more fundamental status: "The world whole . . . is a four-dimensional plenum of qualia in relations, eternally actual through and through . . . Every part of [the world sum], concrete or abstract, is what the philosophers have called "particular." Williams, 1986, pp. 2-3. See also Campbell, 1990, pp. 3, 21, 55, 59.

6.3 PARTICULAR PROPERTIES

Particular properties are familiar entities, both empirically and intuitively. A particular property exists as a different aspect in an object and resembles certain particular aspects of certain other objects. In my approach, this is not different from saying that properties are elements of compresences which occupy particular positions, and stand as terms of resemblances. The blue of these jeans, for example, is a particular property and differs from the blue of this book, which it also resembles.¹⁸ Extensionally, particular properties coincide with tropes and property instances, but they disallow isolated (free-floating) existence, and their types are mind-dependent. Any property inheres in an object, that is, it exists in a compresence, and is indexed to particular positions and dates. As Campbell declares,

Two cases of red, not being at the same spatiotemporal location, are indeed two, two different, [properties]. How can two exactly similar items *be* two and not one? By being at different places at the same time or by the one ceasing to be, at a time before the other comes to be . . . [Properties] do not monopolize their places; but they are nevertheless distinguished from all others *of the same kind* in the same way, with each [property] of a given kind occupying a unique set of intervals on the dimensions.

(1990, pp. 53–5. I have substituted ‘property’ for Campbell’s ‘tropes’.)

6.3.1 *Properties and position*

Reinhardt Grossmann attacks the concept of a particular property (1992, pp. 30ff.). Among others, he argues that our belief that properties are spatially located is unfounded. Given two white billiard balls A and B, from the premises ‘(1) A and B *are located* at certain places on the table’ and ‘(2) A and B exemplify the colour’, we tend to infer that ‘(3) The colour *is located* at certain places’. But this is hardly conclusive: ‘One can of course *say* that the colour is located over here and over there. But one must be clear that this is merely a short way of stating (1) and (2); that the colour is not, like the two balls, literally located in space’ (p. 25). Grossmann will not be deterred by those who might point to particular colours or urge that they see them with their own eyes. He insists that the alleged fact of showing

¹⁸ As Stout, 1930, p. 398, says, the respect in which two particular properties are alike is also the respect in which they are dissimilar.

or seeing the property is nothing but seeing something that exemplifies the property. Properties are neither in space nor in time. They are not concrete; they are abstract existences (p. 24).

Such a position repudiates not only nominalism, but, rejecting that properties exist *in rebus*, it also refuses to grant immanent realism. No wonder Grossmann's notion of 'exemplification' is quite opaque; what is said to exemplify a property F in space is not thereby allowed to contain, at that position, an example of F (pp. 9–10). If properties are neither in space nor in time, and thus are not located in objects even as instantiations, it turns out to be a total mystery how it is ever possible that we come to know that things exemplify properties, by perceiving them in space and time. For if property instances are not localized in objects, then objects do not contain any diversity in them or any difference from other objects, at the positions they themselves are localized. But if there is a perceptible difference between an object's exemplifying F and its not exemplifying it, how is this graspable other than by perceiving that difference in the object, to which we can also point? How does this approach make room for empirical knowledge? Moreover, Grossmann's view becomes quite hard to comprehend when one reflects on cases in which the possession of a certain property by an object precisely at the position it exists is a condition for that object's occupying that position. Consider a bolt screwed in a nut. How can it be there unless it has the precise shape it has exactly where it is? I must admit that I am not at all convinced by Grossmann's view that there are no particular properties because properties are not located in space.

I want to call attention here to a point raised by Husserl, in an attempt to display the particularity of properties. Recently, and perhaps surprisingly, the same point has been used for criticizing the Tropes View:

Suppose we concentrate attention on the green of the tree which stands before us . . . If another object with exactly the same colouring were suddenly substituted we should see no difference; the green which we are exclusively minding would for us be one and the same. Suppose all this is so. Would this green, however, *really* be the same as the other? Can our forgetfulness or deliberate blindness towards all that is distinctive alter the fact that what is objectively distinct is still as distinct as before, and that the objective aspect we are heeding is *this* aspect which exists here and now and no other?

(1970, pp. 376–7)

Thus according to Husserl, instantaneous substitution yields a different particular. Armstrong has pointed out that this is a somewhat unwelcome consequence, for 'the swap lies under the suspicion of changing nothing' (1989, pp. 131–2). If swapping indiscernible particular properties makes no difference in the universe and yet a theory regards this as a difference, then such a discrepancy counts against the theory. Campbell's answer to this challenge is that the replacement would constitute a genuine difference in the universe. Though causes and effects in such a world would be exactly the same in type, some would be caused by different tokens. In short, 'The individuality of their aetiology [would be] changed' (1990, p. 72, brackets my adaptation). I agree with Campbell here. Though, unlike the Tropes View, my approach does not permit the operation, this is not a logical impossibility, and one might suppose a supercosmic factor bringing such a thing about as a miracle. Then I declare that although we would not perceive the difference, not only would the swapped property be a distinct entity, all of its causal consequences, too, would be exactly similar but distinct particulars from what they are otherwise. The differences are not spurious, and our inability to notice them is no reason for ruling them out.

To turn to a closely connected problem, relating to the positions of particular properties, now I will consider a concession Campbell makes in response to a criticism by James Moreland (1985, p. 66; Campbell, 1990, pp. 68–71). Campbell concludes in this respect that positions are not amongst the individuating principles of particular properties and that they should themselves be regarded as particular properties. I disagree with both the criticism and the defence. To show how they both fail to be cogent let me first restate Moreland's critique in my own terminology. If a particular property is both *simple* and individuated by its position under a respect of resemblance, it seems to follow that such a position cannot be anything different from the respect of resemblance. Saying that the two are different implies a rejection of the property's simplicity, or uncompounded nature, and consequently, of the principle that particular properties are the analytic fundamentals of ontology. But if properties are simples truly, since in such circumstances their position and character (i.e., respect of resemblance) would have to be the same thing, every other simple property compresent in the same position would have to be said, also, by transitivity, to have the same character. Assuming simple particular

properties yields, therefore, the absurd idea that different properties such as colour, hardness, weight, taste, or shape, have no difference after all!

These consequences arise only if we regard position as part of the nature of the property. Declaring that position is among the principles that individuate a property does not necessitate, however, that one should view it as intrinsic to propertyhood. As I have argued in section 3.2.3, a property *has* a position in virtue of *being in* that position. Positions are particular, but they are not properties; they are media in which compresences of properties are conserved. Thus, from the fact that a particular property is simple and that, among other things, it is individuated by its position, one cannot conclude that simplicity makes character and position collapse into identity. Let us recall that Campbell's response to the objection has been to assume that positions are themselves tropes. A so-called 'place-trope', however, seems to be an incomprehensibly complicated notion. Is a place-trope compresent with other tropes at a place, or does being in a position not apply to it? But if it is a member of a compresence how is it that unlike the other members it cannot be at a place? It seems that if a place-trope has not a place, it is not a member of a compresence. After all, the compresence exists *in* a place and what contains a compresence is not a member of it, since as a member such a property would have to be where the compresence is. Thus if places are tropes, as particulars they can never be members of compresences, and such a consequence appears quite absurd. Moreover, how are the so-called 'place-tropes' supposed to be related to other place tropes? What are empty positions? How many place-tropes are there in a large empty place? If just one, what happens when we place a compresence in it?

6.3.2 Problems of complexity and individuation

I began this chapter with the comment that existence is marked by an extremely complex variety of concrete entities made out of a less diversified plurality of elements. Properties make exceedingly complex compresences. Properties contribute to compresences in highly varied extensions and configurations, sometimes extending all through the volume of the compresence, and sometimes only through a fraction of it. As a result, even within the same

compresence, particular properties under the same respect of resemblance may be many, some resembling exactly, others somewhat more distantly, some located adjacently, and some separated by incompatible properties. Such facts of a high degree of complexity can be mystifying. Campbell, for example, finds himself compelled to abandon the ontology of 'manifest tropes' in favour of a tropes account of a deeper reality. Giving up the Williams-type empirical realism, he subscribes eventually to the long and impressive tradition of philosophers who dissociate ontology from the 'apparent' world of perception (1990, chapter 6). I have not much affinity to this tradition, and I do not find the use of particularism especially fruitful in such a context.

I wish to go over some of the reasons that have led Campbell into changing his mind so drastically. If a particular property extends in space and time, a question concerns where it begins and where it ends. Only if one can make such decisions reliably can one individuate different particular properties and become capable of counting them. Drawing the spatial and temporal boundaries of properties may, however, prove to be quite a difficult task. Although the issue is fully general, along with Campbell, I will employ colours for easier illustration. 'Colours occur as a spectrum with each hue *shading into* the next ... 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 neighbours' (1990, pp. 138–9). Similarly for the temporal boundaries. Usually changes are not abrupt and occur slowly and gradually. Hence in that dimension, too, one is threatened by dimensionless minima. I do see that the existence of spectra or a manifest gradual difference in properties entails that the uniform particular properties constituting such things are very minute. On its own, however, this fact does not entail at all that the constituents be 'point atoms', or that *every* particular property should be so. Surely, there is no reason why properties should exist in unities of equal dimension. On the contrary, properties appear to be distributed in the universe in different amounts.

This is not to deny that a complete description and counting of particular properties in a compresence is a tremendously complex affair. Why should this complexity be a reason for relinquishing the

particularistic depiction of the perceptual world? No doubt, the complexity under discussion is quite a general problem and not one restricted to the portrayal of the world by a Williams-type particularistic empirical realism. I have difficulty in believing that the task of a complete description of reality is made easier by adopting an alternative approach such as that of Campbell. If so, however, complexity cannot be a reason for giving up the former approach. Is the actual depiction and counting of different property instances a genuine philosophical task anyway? Offering criteria to make entities countable may very well be, but not the actual counting itself.

It is true that the tropes philosophy should have a much greater responsibility for determining the criteria of identity of particular properties than any other approach to the nature of the aspects of objects, including the present one. The reason is that according to such a philosophy properties individuate as *distinct* entities over and above being merely *different* ones, existing along with others at a certain position. Tropes can be unique occupants of positions, i.e., they can be detached from every other thing. Nevertheless, as I have just remarked above, this does not necessitate that even such a theory should do anything more than supply criteria for counting. I must point out in this connection that from my own point of view particular properties are not individuals. Particularity is not the same thing as individuality (see Butchvarov, 1966, pp. 7, 55). As I supposed in 3.1, the latter entails distinctness and since particular properties inhere in substances by physical necessity, they cannot individuate. Distinctness is, as I understand it, to be separate in space. But there are other and weaker senses of being distinct; to invoke Duns Scotus' terminology, individuality is only the 'real' sense of being distinct. Apart from what he calls a conceptual distinction, which is mind-dependent, there is the crucially important 'formal' distinction. The formal distinction is defined with reference to a mind but has its basis in reality; it is the condition of different entities existing in union in the physical reality. The formal distinction finds one of its best applications in the difference of a particular property from others. The *formal* distinctness (or formal individuality) of a property is a matter of the position it occupies, and of the respect of resemblance which relates it to other properties. Thus the criterion I propose for counting properties is simple and familiar. I count every particular difference as

a distinct property, treating what is continuous in exact similarity as identical. This criterion is sensible to distinctness that is due to positional difference (i.e., it allows counting the reds of distinct drops of the same blood as distinct properties) and to the distinctness of properties which overlap by existing in the same extension of the same compresence, and therefore at the same position (i.e., it distinguishes the red and the fluidity of each drop). Moreover, it does not differentiate the different parts of the uniform spread of red in the same drop of blood.

I end this section by mentioning two other worries which (along with the ones discussed already) lead Campbell to renounce the particularism of the manifest world. My opinion is that these worries are unnecessary. 'If we take an unbroken expanse of, for example, green, of normal size, and claim that it is just *one* trope, then its left half is not a trope, but merely a part of one. Yet were that left half to exist on its own, it would be a perfectly good trope in its own right. So by the mere Cambridge operation of painting the *right*-hand half of the original trope light blue, I can change the *left*-hand side from a non-trope to trope' (Campbell, 1990, p. 136). Such a possibility is incompatible with the fundamentality of properties, thinks Campbell, and concludes that the only way to deal with this involves granting in advance that even what looks like a uniform expanse of a colour (or any other property) is in fact a stretch of juxtaposed plurality of minimal size particular properties which resemble exactly. I cannot agree that Campbell's atomism follows from the fact brought to our attention. If it did, atomism would be the only possible account applying to objecthood, since a closely analogous feature marks objects. My right arm is not an independent object, and by the mere Cambridge operation of destroying the rest of my body, my arm becomes an independent object, and this type of operation may be executed indefinitely many times, till the level of micro particles is reached. We do not, however, deny the fundamentality of middle-size objects because of this, even though we may grant that any such object is further divisible into its parts which are potential objects themselves. Moreover, if fundamentality is to be sought in indivisibility into proper parts, the consequence that follows for both particular properties and objects is *not* that some sort of atomism is true. What follows from such a requirement is that nothing extended

can be fundamental and that only geometrical points are to be regarded as basic.¹⁹

Finally, Campbell thinks that once we recognize particular properties as primary, the very fact of change becomes puzzling. For on the face of it change seems to be a property replacement, in the sense that one property gives way to another one not identical with it. Now where does the outgoing property go, and where does the incoming property come from? 'The trouble with such a theory is that the whole process remains absolutely obscure and magical' (1990, p. 141). But why should the amazement be restricted to particularism? Is it not as bewildering to contemplate how a property instantiation is replaced by another, and (if they do at all) how such instantiations emanate from and return to the relevant universal? Again, the problem encountered here does not arise specifically for particularism and is a general one that any ontology must face. As I have sketched in my introductory chapter, Ancient Greek thought abounds with answers to this riddle, ranging from a flat rejection of change to the relativization of it; from proposing the 'Unbounded' to the 'potential', 'privation' and the like. Those philosophers were at least as astonished by change as many of us are today. Section 4.1.1 discusses various accounts of change. There, I have opted for the view that the instantiation of properties is indexed to dates. Such a conception dissolves the surprise caused by finding at a particular date that a property existing at an earlier date is no longer. Thus it removes the worry, however misplaced the latter may have been.

6.4 THE QUALITATIVE NATURE OF OBJECTS

Let us consider the following four competing approaches to objecthood. Although these share certain aspects, they nevertheless remain incompatible. Let us call these positions Aristotelianism, Leibnizianism, the Tropes View, and that of Inhering Particulars. The former two differ from the latter by requiring that real properties be universals. For these views, the identity of shareable universals implies the identity of the instantiations of such universals. This is why Leibnizianism sets forth the Identity of Indiscernibles, and Aristotelianism, assuming the

¹⁹ See Leibniz' argument, 1934, pp. 3–20, establishing the existence of monads (dimensionless spiritual centres of force) as constituents of the well-founded phenomena of the perceptual world.

same idea in the background, accounts for the fact that such a thing does not occur by offering 'the substratum' as individuator. For Leibnizianism and the Tropes View, properties are the fundamental units of physical existence, while for the other two such units are objects. Hence only Leibnizianism and the Tropes View imply the Crude Qualitative Account. Against Aristotelianism, all three other views reject the existence of such things as substrata. On the other hand, Aristotelianism and the thesis of Inhering Particulars agree that a substance is not merely a sum of abstract qualities, and that objects possess characteristics such as impenetrability. While Aristotelianism treats this characteristic as a fundamental property of the object's material nature, the other account reduces it to the conservation of properties in space and time. According to the latter, properties are not ultimates as independent physical entities; they are ultimate analytical units, which, as particulars in compresence, constitute the concrete units of physical reality. The thesis of Inhering Particulars denies that properties of concrete things can be abstract. According to this thesis, being a particular necessitates both existing and being conserved in space and time either as a concrete, or as an aspect of a concrete.

I defend the thesis of Inhering Particulars against the other positions. I have undermined Aristotelianism and Leibnizianism already, arguing that properties are objective only insofar as they are particular. I have also shown that such approaches are incapable of offering adequate principles of individuation. Against the Tropes Theory I shall try to demonstrate in what follows that concrete objects are not built out of abstract material, and will distinguish abstract qualities from those that exist as particular aspects of concreta. I will argue that there are no physical entities which are also abstract.

6.4.1 On physical abstracts

The present account differs from the Tropes View by regarding particular qualities as dependent beings, that is, as things existing on condition that they inhere in substances. That there must be substances to inhere in does not entail, however, that there must be substrata bearing these properties. This point, missed by many philosophers (see Martin, 1980; Armstrong, 1989, p. 64; Campbell, 1990, p. 69. See also section 2.2 above) allows us to combine the

valuable insights behind Leibnizianism and Aristotelianism, avoiding at the same time their shortcomings. All the principle of inherence requires is that properties exist in objects, not that objects should embody substrata. A sizeable part of the present study has been devoted to establishing that a substance does not necessitate a substratum and that the functions traditionally attributed to the latter can be fulfilled by properties. Let us reinterpret the principle of inherence as laying down the condition that for any property to exist is for it to exist in a compresence. Such a compresence will not be a bundle lacking individuality, for the components of this bundle will not be universals.

To require that properties be particulars without imposing the principle of inherence does not entail the non-existence of compresences; it only makes them incidental. This is a main contention of the Tropes View. According to this view, in our observation qualities exist in compresences, but they do not have to; for once we lend them fundamental ontic status and a principal rôle in accounting for objecthood, we cannot also make their existence depend upon objects (Campbell, 1990, pp. 3, 20–1, 24, 55, 59, 99, 122). This contention involves, I think, the mistake of confounding analytic and physical ultimates, and the very product of this confusion, namely the concept of ‘abstract particulars’ (which may allegedly exist in their own right and independently of any compresence), calls for a critical discussion.

Like the present approach, the Tropes View is a qualitative one which analyses objecthood in terms of properties. Furthermore, it shares the advantage of not entailing the orthodox interpretation of the Identity of Indiscernibles, and therefore does not fail to individuate objects. Donald Williams has characterized particular entities as ‘those which do not conform to the principle of the identity of indiscernibles ... that is, particulars are entities which may be exactly similar and yet not only distinct but discrete’ (1986, p. 3. For a more detailed exposition see Williams, 1966.) The thesis of Inhering Particulars totally agrees with this, and regards it as a direct outcome of the conservation of qualities in space and time. When Williams envisages, on the other hand, properties as abstract, he seems to reach this conclusion on the basis of observing that such particulars are not concretes by themselves, that they involve no concurrence of a plurality of entities:

Object and property

Besides ... division into concreta, however, we are accustomed to think of abstraction as a mode of analysis and of analysis as also a mode of division, and we need only to take this literally to affirm that there are abstract parts and objects also – or, if we are squeamish about ‘parts’ in this connection, then abstract ‘components,’ each of them as actual an entity as any concretum ... Abstract entities differ from concreta in that many of them can and do occupy the same plime [spatiotemporal position] ... Two tropes which are together in the sense that they occupy or pervade the same plime we call ‘concurrent,’ and say that they are ‘embraced in’ or ‘inhere in’ and in a certain good sense are ‘qualities of’ the concretum which is the total occupant of the plime. (1980, pp. 3–4, bracketed comments mine)

Tropes can exist, therefore, both in isolation and inhering in substances. Following Williams’ footsteps, Campbell has declared that ‘Aristotle got us all off on the wrong foot when he treated qualities as existing only as *inhering in a substance* ... It is a *matter of fact*, and not a metaphysical necessity, that tropes commonly occur in compresent groups ... free-floating tropes are at least metaphysically possible ... Individual isolated tropes, compresent with nothing, are admitted as possibilities’ (1990, pp. 21, 55, 59. Cf. Berkeley, 1969, pp. 117–18. But cf. Simons, 1994, p. 557).

The Tropes View is keen on distinguishing between what it regards as the two importantly different senses of ‘abstract’: first, the usual sense of bringing something before the mind by a method of selection, and second, the crucial notion of a ‘non-concrete physical’. It is in the latter sense that tropes

exist out there waiting to be recognized for the independent, individual items that they have been all along. For Williams and for us following his usage, abstract does not imply *indefinite*, or *purely theoretical*. Most importantly, it does not imply that what is abstract is *non-spatio-temporal* ... Abstract here contrasts with *concrete* ... [A] pea is concrete; it monopolizes its location. All the qualities to be found where the pea is are qualities of that pea. But the pea’s quality instances are not themselves so exclusive. Each of them shares its place with many others. (Campbell, 1990, p. 3)

Thus, as intended by this theory, abstract particulars are non-concrete physical entities, which, unlike concreta, are interpenetrable.

I react to this stipulation by proclaiming that nothing abstract can be a particular, and that no particular is abstract. The notion of an abstract quality is logically possible, but that of a physical abstract quality, which the Tropes View appeals to, is inconsistent. Before

arguing this, I propose to discuss the conceptual sources of the idea of a physical abstract particular. There seem to be three such sources. First, Williams contrasts properties with concrete things, second, he contrasts them with what is general and, third, he treats them on a par with the parts of objects, however special sorts of parts these may be.

I begin with the latter. The Tropes View regards the parts and the attributes of an object analogously. If an object is a bundle of particular properties, then the items out of which the bundle is made should be its parts. Accordingly, while concrete particulars are the 'gross parts' of a concrete whole, tropes are its 'finer parts'.²⁰ The parts of an object are detachable; if properties are like parts, then they too are detachable, but only as 'abstract' entities, for even if properties detach, they will not do so as substantial parts, that is, as concrete things. Surely, though, such reasoning overlooks the fact that qualities differ from parts in a more radical way than this. Combining the parts together will yield the whole object, for the parts and the object are the same in ontic sort; both are concrete. In contrast, a patch of colour and a particular shape do not add up: they can exist at exactly the same place at the same time, compresently, complementing one another. When qualities add up, they yield only various total qualities of the concrete whole under different determinables. There is not a comparable sense in which different properties can combine to yield the object itself. Properties are unlike substantial parts, and a property can only be the part of a property, never of an object. A compresence is not a result of addition. But the trope theorist will retort that nothing in this remark excludes the 'metaphysical' possibility, in addition to the merely logical, that properties may exist in isolation from concrete objects.

It is true that properties are neither concrete nor general. It hardly follows from this, however, that they should be abstract particulars (cf. Williams, 1980, p. 5). Just as 'not concrete' does not have to be 'abstract', 'not general' may not be 'particular'. Abstract things that are not general may be specific, and particulars that are not concrete may be aspects of particular substances. It is not a good argument to infer that properties are abstract because they cohabit in a compresence, while concrete things do not. Even though concreteness entails

²⁰ Williams, 1980, pp. 4–7. See section 2.2 above for other objections. See Husserl, 1970, pp. 435–89, for the distinction between 'pieces' and 'moments'.

particularity, being a particular does not entail being concrete. As an aspect of a concrete thing, a quality does not face the dilemma of being either abstract or concrete. Similarly, not being general does not entail being a particular, for specific does not mean particular: although anything particular is specific, the converse is not true at all. A triangle with sides specified in length is specific but not particular. It can be multiplied many times.

My own view is that a property can fail to be a particular only by being abstract. An abstract property, on the other hand, can be more or less general or specific, but as such it is a universal. 'Universal' does not mean 'general': exactly the same specific shade of blue (i.e., exactly similar shades of colour) is instantiated in many objects. I think the Tropes View will agree that everything universal is conceptual; but then, as I want to argue, what is abstract and not general is specific and non-physical. A particular, on the other hand, is never abstract, and is either a concrete or the aspect of a concrete.²¹ A particular property of a concrete object is an element or component of this compresence without being a part of it.

Consider now the possibility of qualities existing in isolation or abstraction from substances. As is obvious from the quoted material above, according to the Tropes View such a thing is more than a logical possibility, and could take place in the physical world. Moreover, let us keep in mind that such abstract entities are said to be interpenetrable; that is, they now exist in compresences. I will argue that the tenet that something can be physical and abstract is incoherent. To be sure, I use the word 'physical' here in a sense not coextensive with 'objective'; entities such as sets and numbers may be said to be objective without being physical. My argument is simple and somewhat familiar. It begins with the premise that it should be possible for anything physical to engage in causal interaction. Nothing, and in particular no property, can be both physical and causally inert in the sense of its not being possible for it to affect, or be affected by, other physical entities. A causally inert entity cannot bring about any change in the world, and nothing can inflict a difference on it. Physically, such a thing is negligible, and best ignored: not even an epiphenomenon, it is a shadow cast by the mind onto physical reality. I will not attempt to substantiate this

²¹ Gregory of Nyssa took the opposite view. See Sorabji, 1988, pp. 52–3.

premise any further, and I believe that there is a consensus among philosophers in its favour.²² My second, and perhaps more controversial, premise affirms that an abstract property is causally inefficacious,²³ and that to engage in causal interaction any property must be a property of some substance. The conclusion I draw from these propositions is that no abstract property can be physical, and that therefore the notion of a physical abstract is incoherent. Now I try to substantiate my second premise.

I agree with thinkers who proclaim that when things act causally, they act in virtue of their properties (see Armstrong, 1989, p. 130), or that 'The causal agent is a state, or event, or process, always particular and always qualitative. It is not the stove, the whole stove, that burns you ... It is the *temperature* that does the damage ... Causes are always features ... and every particular cause is a particular feature or constellation of features' (Campbell, 1990, pp. 22–3). It does not follow from this thesis that the causally efficacious qualities do what they do independently of the substances in which they inhere. For there to be causal interaction, the causally relevant qualities must exist as borne by concrete things. It is true that causation necessitates qualities as its relata, but, equally well, it requires bearers for such qualities. The reason is that unless supported by the compresence of other qualities, what in a context is a causally relevant quality cannot act there. Without the compresent support of other properties, no property can relate with others causally. Any other property exists in a compresence, and to effectuate a change in such a compresence, the causally relevant property requires the support of other properties.

This needs further clarification. Consider impressing a mark by a seal on a blob of wax. We say that what causes the mark is the relieved shape on the seal. In abstraction from the seal, however, that same shape cannot be causally efficacious. Unless it is compresent with hardness, a surface quality and pressure in the right direction, the shape will not yield that effect. (Let it be noted that the cited qualities require, in turn, other qualities in support, and so

²² 'I take the main reasons for believing in contingent universals to be the rôles they play in causation and in laws of nature, and those laws are what I take to give those universals their identity.' Mellor, 1991, pp. 172–3. Cf. Lewis, 1986a, pp. 83–5, 172.

²³ By 'inefficacious' I mean causal inertness in the sense of its being incapable both of causing and of undergoing any change.

on.)²⁴ A free-floating shape will be invisible (it will not reflect light) and moreover intangible. Much the same applies to other qualities which, in appropriate contexts, are causally efficacious. Consider a drop of acid on a piece of chalk, causing the bubbly corrosive action. Abstracted from the drop, the corrosive quality of acid (i.e., the replaceability of the hydrogen atom by one of metal) will remain ineffective, for it will not be supported by weight, fluidity and a surface quality that would enable it to spread and penetrate downwards. The heavy stone exerting force on the scale does this in virtue of its weight. But once abstracted from the stone the weight will be deprived of its effects. Causally relevant properties are efficacious only in conjunction with others that support them. Thus, to have their usual effects, properties must exist in compresence with others. *On its own*, a property has no causal efficacy, for it is *interpenetrable*, and thus will yield to every other property whatsoever. It lacks the supportive resistance lent by a concrete entity bearing it, a condition that would enable it to affect a property of another substance causally, instead of interpenetrating with, and hence inhering in, that substance.

A free-floating property is immutable just as it is ineffective. An abstract weight, for example, cannot be handled, held, moved or placed on a scale. How could anything happen to it even if we exploded a bomb at the position it is alleged to be? How could it be modified by other properties if it is interpenetrable with them? Let us note that these points are not epistemological; they present purely ontological consequences. It begins to look as if abstract particulars are entities presumed to be in the physical world without at the same time there being a possibility for them to interact with anything else in there. I believe this reveals that they are 'abstracted' by the mind. Abstract particulars fail to display the basic character of what is physical. I contend that a *physical* abstract is an incoherent notion.

The only positive reason the Tropes theorist offers in defence of his claim that abstract particular properties are part of the furniture of the physical world is the logical possibility that properties may exist in isolation from substances. Without falling into apparent contradiction we can imagine the colour of this pen to detach from it and then

²⁴ I am not referring here to a set of causally necessary factors said to be sufficient together. What I am suggesting is that, to do the causal job it is said to do, each such property must be sustained by other properties, and that even the causally relevant 'constellation of features' cannot be efficacious in abstraction.

begin to float freely in the air. Tropism grants that free-floating properties do not occur, but it proclaims it to be a 'metaphysical' possibility that they may occur; although properties exist mostly in substances they could exist in isolation; no necessity blocks this. I think the move from the logical possibility of abstract properties to their physical possibility is not warranted, and the inconsistency of a physical abstract proves this.

Finally, the Tropes View owes us an explanation of why and how particular properties all happen to exist in compresences, once it is granted that they are detachable and interpenetrable. A theory that allows the physical possibility that properties may exist apart from compresences must give a plausible explanation of not only why we don't ever see such things; more importantly, it must offer accounts of why properties exist in compresences without sliding apart, and moreover how, that is, on what principle, they do so. If inherence is not recognized as a fundamental fact, nor as a primitive of ontology which marks the nature of propertyhood, then Tropism owes us a convincing explanation of how a property exists in a compresence, while, as an interpenetrable entity, it does not have to. For example, why don't some of the properties of a substance partially stick out of the extension of that substance?²⁵ For the Tropes View the fact of inherence presents a major problem calling for explanation; we need to know why invariably interpenetrable abstract properties locate themselves tightly within compresences without falling apart. (Husserl's view, 1970, p. 478, is immune from these difficulties. See also Smith, 1982.)

Let me evaluate the impact of what has been argued here. If my arguments are sufficiently compelling, then there are no abstract properties that are also physical. The particular entities of the physical world are either concretes or the inhering aspects of such concretes. Conversely, anything abstract is universal and, perhaps with the exception of entities such as sets and numbers, mind-dependent. Does this refute the Tropes View? It does, if the latter keeps on permitting abstract properties, insisting on refusing the fundamentality of inherence.

My arguments here do not affect the particularity of properties. If it

²⁵ Magnetism surrounding a magnet does not exemplify a property which extends beyond an object's surface. Magnetism can be included in the ontology as a field, and not as a property.

was a worry of the Tropes View that acknowledging inherence would commit one to the doctrine of a mysterious substratum, in a way similar to that of C. B. Martin's, then such a scruple is unfounded. I have argued in 2.2 that a bundle view is consistent with the principle of inherence. Thus the effect of my present argument is that abstract particular properties alleged to be in the physical world collapse into inherent particular aspects of substances. In other words, it reduces the Tropes Theory to the present view, namely to that of Inhering Particulars. If it is protested that the difference between the notion of a trope and that of an inhering particular property is not big enough to deserve the title of an independent theory, I am prepared to adopt the name 'trope', but my condition will be that such entities are not to be regarded as abstract particulars any more.

6.4.2 Towards an analysis of objecthood

I maintain that objecthood can be explained without matter, an invention of Aristotle's. Before him, the term 'hyle', 'matter' in Greek, meant 'wood' or the material out of which something can be constructed (see Wheelwright, 1966, p. 322; Solmsen, 1960, chapter 6, esp. p. 118). For Aristotle, primary substance and matter are coextensional: matter is an analytic component in the notion of primary substance, any individual object being the union of it with form. As such, the concept of matter assumes several functions. In chapter 2 I have tried to keep some of these under the blanket term 'The Benign Doctrine'. In chapter 3, however, I have rejected matter as an individuator, and in chapter 5, as a principle of permanence through change. Moreover, I have combated the anti-Aristotelian contention that matter is a non-particular concrete entity falling outside the category of objecthood. In the tradition, matter has been assigned two further rôles, both of importance. First, it is seen as a principle of concretion in virtue of which properties hang together, that is, inhere in the substance, and second, matter is said to render the substance impenetrable. From the point of view of a universal conception of properties, neither of these characteristics can be accounted for formally, and hence matter is indispensable. With this, I disagree. Formal aspects can account for objecthood, and thus matter can be eliminated from the ontological assay, allowing us economy and transparency in our grasp of physical existence. I am not

proclaiming that physical substance never has a substratum. An articulated thing does indeed necessitate a benign substratum, but then, the latter is not matter in the sense of an unanalysable ingredient. Eliminating matter need not lead one, as it did Berkeley, to the denial of physical existence. An adequate qualitative analysis of objecthood simply shows that matter means no more than object.

Below, I will formulate principles according to which properties exist by inhering in compresences at particular positions. A first thing to be recognized towards this end is that any existing quality must be extended. However small, it must spread as the property it is. Being extended does not, however, entail spatiotemporality; even abstract qualities extend. I submit that extension is a condition and not a quality itself. It is the presence of a certain quality in a certain 'quantity' in space and time. This gives the sense in which space and time constitute a medium of conservation for particulars present in concrete compresences. The conditions of concrete existence are as follows:

- (1) A quality is present in a quantity: it spreads or extends.
- (2) If particular, then a quality cannot be abstract, and its presence is conserved in space and time at a given position. It goes out of existence only by leaving behind another quality under the same determinable.
- (3) The condition of conservation excludes other properties under the same determinable from the spatiotemporal position at which a quality extends.
- (4) A particular quality is conserved in space and time only in compresence with other properties under different and complementary determinables: since complete compresences in space and time are concrete entities, this amounts to saying that particular properties are aspects of the substances in which they inhere.
- (5) For each particular property there exists an indefinitely large number of resembling properties spreading throughout the universe.

The above conditions make space and time presuppositions of existence for qualities, and hence for concretes. This does not entail, however, that space and time are independent of their contents, that they can antedate them or exist in their absence. The conditions are

consistent with the idea that without qualities, and therefore without concretes, there would be no space or time. Moreover, they do not entail Newton's conception of an object as spatial extension endowed with properties.²⁶ Such a view does presuppose absolute space, and envisages motion as a succession of exactly resembling objects along a spatiotemporal path. Indeed qualities exist on the condition that they occupy particular spatiotemporal positions, but they are not attributed to such positions. A position is not a bearer of properties; rather, it is a medium transiently interpenetrated by bundles of qualities, and there is no entailment at all that such a medium will exist in the absence of all qualities. The first four conditions explain what it is to be an object. They are proposed as necessary and sufficient conditions of existence for concrete substances. The same conditions also account for impenetrability and individuation; they explicate how an individual object is a compresence of properties at a spatiotemporal position. Finally, all five of them describe the basis of universal order.

These conditions are rough formulas. Although I am not capable of developing them here in a properly detailed way, I can indicate directions in which their refinement would lead to something more promising. As a first step, I think it will be useful to draw a distinction between 'fundamental' versus 'derivative' properties, somewhat paralleling the Modern contrast between the so-called primary and secondary determinable qualities. Our distinction, however, is not to be conceived in the sense of what is objective versus what is subjective, or as the real versus the apparent.²⁷ Let us conceive of fundamental qualities as those determinables an object cannot be without, and the possession of which can explain the possession of certain derivative qualities, which an object can be without. Analysability does not eliminate independence of the mind. Objects have some of their qualities in virtue of possessing other qualities, that is, superveniently upon the latter.²⁸ This accounts for what appears as an

²⁶ See Sorabji, 1988, pp. 35, 39, 40. Plato seems to be the father of this view: *Timaeus*, 48E–53C.

²⁷ One may draw the distinction by appeal to Locke's criterion that some determinable properties are borne by objects under any circumstance whatsoever, in contrast with others which they may or may not possess. *Pace* Locke, 1961, vol. 1, p. 104, I do not conclude with him that the latter type of qualities 'are nothing in the things themselves'.

²⁸ For example, the structure of the surface of an object, which is explainable in terms of shapes, configurations and sizes, is itself objective and in the same sense it absorbs light of such and such wavelengths, reflecting the rest.

exception to (2): coloured objects may become translucent, or even transparent and colourless. It seems that here a determinate goes out of existence without being replaced by another, under the same determinable. The explanation will be that while (2) applies to fundamental properties strictly, it applies to derivative properties only contingently: (2) applies to the latter on the condition that the compresence contains the appropriate fundamental determinates, in a fashion yielding the relevant derivative properties. Thus the loss of one determinate derivative quality may bring about either another determinate under the same determinable or none.

Condition (4) must be developed further, since there are a number of crucially fundamental issues it has to account for. Why do particular qualities exist only in compresences? Is there a principle behind inherence? What determines being a dependent existence? Some adequate ontological reinterpretation of Frege's concept of 'saturation'²⁹ will help answer the above questions. I declare that on its own, a particular property is an *unsaturated* entity; it is saturated by existing in compresence with other properties.³⁰ Together, a plurality of unsaturated existences complement and saturate each other, forming a (more) saturated entity. A property is saturated *fully*, when it exists in a compresence of sufficient diversity. At such a level of sufficiency, every property in the compresence is saturated by every other fully, and the *complete* compresence they form together is a unity, an object, a fully saturated entity. Change in the elements of such a complete compresence will occur within the boundaries of invariant determinables, and any loss or gain of determinable properties will be of the derivative type. When is saturation complete? What is the level of diversity sufficient for a compresence's full saturation (see Rosenkrantz and Hoffman, 1991, p. 835, fn. 2)? My view is that this question calls for a list that cannot be offered *a priori*, and thus

²⁹ 1970, pp. 24, 31–2, 47, 54. Husserl's (1970, pp. 478ff.) version of such an *internal* relation that holds the properties in a compresence is what he calls 'a foundation relation'. Elucidatory work on the latter is in Smith, 1982. For difficulties of binding a compresence together by appeal to *external* relations, see Simons (1994).

³⁰ According to Frege, a function (concept) is saturated by an argument (object). No doubt, in its syntactical interpretation, saturation does not concern the concreteness of physical entities. But Frege's idea is also interpretable ontically (see Klemke, 1968, part I). Unlike Frege, however, I do not suggest that what saturates an unsaturated entity is itself a saturated thing.

the answer does not belong to philosophy.³¹ Other questions do receive answers, however: particular qualities exist at positions in complete compresences only, for concrete existence means fully saturated, and hence independent, existence. Saturation is the principle behind inherence, and this is why properties depend for their existence upon fully saturated compresences of which they constitute the elements.

The concept of saturation enables us to develop an ontological account for essences and causal relations as well. As an initial move, I will call 'essential saturation' the type of condition a number of fundamental properties are in, when they constitute a complex in unity. Essential saturation is not full saturation in that it does not yield a compresence that is a concrete object. Essentially saturated properties form complexes that are dependent existences themselves; they inhere in objects. Besides, an essential saturation does not have to take the form of a compresence in which properties extend over just the same regions in space and time. In such a complex, properties may form a structure with a spatial and/or temporal configuration. In the following two chapters I intend to expand this notion further. At present, I only add two more comments: essential saturation brings together a relatively more limited plurality of properties into a unity, and the complex thus yielded exists like a single simple property. A property may contribute to a complete compresence singly, and hence be fully saturated on its own, or it may contribute to a complex and then be fully saturated by the saturation of the complex property. Since essential saturation forms complex properties with a unity, any such complex fulfills condition (5) as if it is a single property. Hence the manifestly recurrent property-patterns forming the world's order. As for the question concerning just which properties saturate essentially, I give the same answer: this is an issue to be settled empirically.

I admit that, as it stands, what I have sketched here is still at some distance from having the completeness and rigour one would expect to find in a satisfactory analysis. My purpose, however, is more modest; I wish to show that the notion of a compresence of properties

³¹ See Simons, 1994, p. 569, for a confirming opinion. Simons advances a similar account of objecthood as a compresence. But first, his view proliferates principles, making use of both an internal relation binding properties and of a relation of dependence, and second, it seems incapable of explaining how substantial change can occur without the compresence's complete disintegration, i.e., how an essence can be lost without losing the body in which it resides.

can be combined with that of the inherence of properties in a compresence without having to assume a mysterious substratum. I am trying to indicate that it is possible to set up a plausible analysis of objecthood along these lines. I just want to make sense of the Benign Doctrine within the Qualitative Account.

Now stretching the imagination a little, one can conceive of the way the universe would be if some of these conditions did not hold. For example, if (2) failed, particulars could be both abstract and aspects of concreta. The very same ones could then exist both in and out of space and time, and could go in and out of physical existence without leaving a trace behind. Consequently, the distinction between aspect and part would dissolve; abstract particulars would then become parts or components of concreta. The failure of (3) would make impenetrability a mirage, thereby curtailing radically the import of notions such as identity and individuation: 'impossible objects' with contradictory properties would then become possible. If (4) failed, the world could be populated by free-floating isolated particular qualities and not necessarily by the compresences of them. Without (5) the distribution of existence would not be orderly; every particular could be totally different from the others. Clearly, if these conditions failed individually, our present ontic conceptual scheme and science would be almost totally inapplicable. If all except the first failed together, this would entail complete chaos, reminiscent of that described by the Ancient Greeks. The failure of (1), however, annihilates existence as we know it, for if (1) fails all the other conditions fail. It seems quite plain that the failure of any of these five conditions is at least roughly conceivable, and therefore none of them is an obvious logical necessity. Their failure is, I submit, a physical impossibility.

The doctrine that formal aspects alone cannot constitute existence is a familiar, persistent theme in the history of philosophy. At least in part, this involves the tenet that even if a specific essence were fully conceived in the mind, it would not thus be a thing in the sense in which we have things in the perceivable world. No doubt such a remark is true, and must be emphasized in view of those who fail to recognize the contrast between what is abstract and what is a particular. There is also a much less appealing side to this doctrine: for a concrete and particular existence form or essence must acquire matter. The latter is not entailed by the former truth, and I reject it

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unless matter is construed as a portion of stuff, or as a blanket term summarizing the conditions of concrete existence. An entity filling the inner volume of forms or holding properties together is unnecessary for concrete existence. The genuine difference between physical existence and what falls outside it lies in whether or not the form consists of qualities conserved in space and time. Particular and orderly existence of qualities presupposes the latter without conferring independence on it. Space is the receptacle of concrete existence – the bed, as it were – but it is so only if something exists. Here, ontic reliance is mutual.

7

Essence and individuality

7.1 INTRODUCTORY: SOME INTUITIONS BEHIND THE DISPUTE OVER ESSENTIALISM

The doctrine of essentialism we find in Aristotle's philosophy of nature is a result of his analysis of change. Such a philosophy of nature, on the other hand, is a wholesale response to Parmenides' thesis that change is impossible, for if there were such a thing the principle of conservation of existence, that is, the *ex nihilo nihil fit*, would be violated. I have mentioned in chapter 1 that the Ancient Greeks held 'nothing comes out of nothing, and nothing goes out of existence completely' to be undeniable. In explaining how change is possible, Aristotle observes that such a thing is always *relative*, and that it never involves coming into being out of nothing. He declares that, among other things, it was Parmenides' own failure to recognize the distinction between substance and its attributes that led him to believe that earlier philosophers were committed to absolute change and thus to absurdity (*Physics*, i, 3, 186a28). Using today's corresponding notions, Parmenides had not discriminated between the object and the property inhering in it.

A second and related observation of Aristotle's is that the principles according to which substances and attributes change differ somewhat. We know from what has been sketched earlier that, accordingly, when an attribute is said to change, what was actually possessed by the substance recedes into privation, and is replaced by a contrary, that is, an incompatible quality emerging from privation.¹ When substance itself changes, on the other hand, this means that the whole object is destroyed and another replaces it.² The former occurs while the

¹ *Physics*, i, 7 and 8. Privation belongs with the aspects of the substance. It is among the potentialities contained in the underlying matter: see i, 9.

² *Physics*, i, 7; *On Generation and Corruption*, i, 3. The Benign Doctrine implies that even substantial change is not a complete destruction (or generation).

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object itself persists, and is called alteration or qualitative change. Change in qualities marking the latter is so radical that it brings about the end, the destruction of the whole object: such a change is called substantial. In Aristotle's own words:

there is alteration when the *substratum* is perceptible and persists, but changes in its own properties, the properties in question being opposed to one another either as contraries or as intermediates. The body, e.g., although persisting as the same body is now healthy and now ill; and the bronze is now spherical and at another time angular, and yet remains the same bronze. But when nothing perceptible persists in its identity as a *substratum*, and the thing changes as a whole ... such an occurrence is no longer 'alteration'. It is a coming to be of one substance, and a passing away of the other.

(*On Generation and Corruption*, i, 4)

The distinction implies that given a substance, not all of its attributes are of the same standing, for while the change of some amounts to mere alteration, the loss of others brings about the destruction of the whole object. According to Aristotle, an 'essential attribute' belongs to its subject (substance) as an 'element ... in its essential nature' (*Posterior Analytics*, i, 4, 6). It is whatever belongs inherently to a thing's being or essence (*Metaphysics*, v, 18). The essence corresponds with the kind (or the *infima species*) of a thing, and is signified or expressed by its definition, where the terms of this definition are the *genus* and the *differentia* (*Topics*, i, 5, 8). Attributes of a thing which enter into its definition and are therefore necessary to it, constitute this thing's essential properties: they characterize the limits of the amount of change the object may undergo. The loss of any of them entails substantial change, replacing the object by a different one. It follows that a substance may suffer alteration so long as it remains within the kind it is. It will be said to persist identically through time in spite of the changes it goes through, only as belonging to this kind. Hence destruction is marked by a different sortal term's becoming applicable to what remains behind an object. Entities like Proteus are therefore impossible: something cannot remain identical with itself and go on belonging to different kinds at different times. There is reason for believing that according to the *a prioristic* approach of Aristotle, which does not even permit evolution, changing kinds whilst remaining the same living thing is not allowable. The idea applies more firmly (and probably appeals more

universally) when the changes the *same* thing is supposed to undergo involve shifting under a different *genus*, as in the cases of a bracelet becoming a cupful of coffee, a pumpkin turning into a shoe, or a Caryatid becoming a real woman.³

Several versions of Aristotelian essentialism have been defended in the second half of the present century. It has been argued persuasively that kind-essentialism is a prerequisite of individuation. If there is reason for holding that there are particular substances that endure identically through time, then two theses are to be presupposed. The first is that for any such particular, given any point in time at which it exists, it does so as belonging to a certain kind (Wiggins' D(i): 1980, p. 59). This classifies the world of objects into a scheme of sortal concepts capturing the kinds. As such, however, it does not exclude extra-genetic metamorphoses: according to the second thesis, therefore, every particular is of a definite and invariant kind throughout the duration of its existence (Wiggins' D(ii): 1980, pp. 59ff., 117).

7.1.1 *Rejections and rebuttals*

The essentialist tenet that any object necessarily possesses some of its attributes has met with objections. Of such anti-essentialistic arguments I shall mention two types, which I name 'empirical' and 'materialist'.⁴ Both objections charge essentialism with the dual mistake of first drawing an artificial distinction between so-called essential and accidental aspects, and subsequently projecting the intersubjective classifications made on that basis onto reality itself. The empirical objection hinges on the theory of perception. It regards the orderliness of the perceived world as a mind-dependent fact: on such an assumption experience is divided up by the mind into various objects, kinds and properties. Concerning how this orderly division is

³ Today's kind-essentialists agree with Aristotle that the description of Lot's wife's case is incoherent (see Wiggins, 1980, p. 66). The same thing cannot be a human and a pillar of salt. (A concept of woman-pillar would simply be arbitrary.) Contemporary thinkers are less likely to agree that 'Protean' changes are impossible in the same strict sense. No doubt it is quite absurd, for example, that a dog should transfigure into a cat or a vegetable (see Lowe, 1989, p. 103). Nevertheless, there seems to be no *conceptual* impossibility here, and the possibility of Protean changes seems at least open to debate. (See, for example, Wiggins, 1980, p. 72.)

⁴ My intention is to throw a glance at some examples and not to offer a comprehensive study of anti-essentialist views. Thus I do not maintain that these subdivisions are exhaustive.

Object and property

carried out, suggestions range over a spectrum extending from Kant's doctrine of the *a priori* forms of understanding on the one hand, to the pragmatist account on the other. The latter submits that according to our practical needs and interests we parse out the world of experience into consistent objects and kinds, thus obtaining a classification to which we then adhere conventionally. If our practical needs were different from the actual, the division and classification of experience would be considerably different, even if we assumed things to be exactly as they are in the actual objective world. According to our needs, we could, for example, classify half of this table plus the book on it as one object and the other half as another. If it made a significant difference from the standpoint of practical consequences we would classify sour and sweet apples into different kinds. This shows that the concepts or the sortals by which we divide up the world into particulars are mere collective inventions of ours. This argument is not compelling. The correctness of the premise that we need concepts to make sense of experience will not yield the anti-essentialist conclusion unless it is assumed, I think begging the question, that the external world, in itself, is totally unlike its manifestation: one should question whether such an assumption is factually tenable.

A more recent tradition at least as influential as the above may be called, roughly, 'conceptual relativism'. It maintains that a language frames its own conceptual scheme, according to which experience is organized. Concepts within a scheme form an interdependent holistic system, dividing up the stream of experience in their own distinctive way, which is incommensurable with those of others (see Sapir, 1955; Whorf, 1956; Quine, 1960, 1969, 1970, 1975, 1981; Kuhn, 1960, 1970; Feyerabend, 1970, 1981). Heavy emphasis on the claim that different languages systematize the world in radically different ways has led some of these philosophers to overlook the fact that experience has a degree of autonomy, an inherent order of its own not amenable to a total reorganization.⁵ Moreover it is a characteristic assumption of many of these thinkers as well, that 'the world out there' is totally different from our interpretation of it, and remains forever unknowable to us.

Neither approach introduced above has succeeded in establishing

⁵ Quine himself does not share this attitude.

that the world in itself is quite different from the way in which we categorize it. It is difficult to believe that any of the arguments developed within these traditions disproves the point that arbitrary categorizations of experience will be refuted by experience itself, that a classification implying, for example, that horses lay eggs will be disconfirmed.⁶ Classifications of the same sensory input under different conceptual schemes do indeed diverge to a degree. But as is granted by many conceptual relativists, classifications nevertheless coincide empirically at the level of the inherent order and regularity of sensation. It may still be upheld, therefore, that even if in different conceptual schemes the same empirical input is placed under kinds that do not correspond tightly, a certain experience retains nevertheless the same structure and content within each, and its observable relations with the experiences of other entities coincide across the schemes. Whatever different conceptual schemes make of experience, the biological basis of our perceptual faculty is common, and not enough reason has been offered in substantiation of the idea that even the inherent order of our sensation is relative. This will render 'half-tables' and 'half-tables-plus-books' rather suspicious within the realm of empirically confirmed objects. Retreat into holism involves no further gain for anti-essentialism, if it is not explained how theory or language could invert, affect and revise the mutual relations of the different elements of experience induced by a natural (and reliable) process, in addition to placing patterns so acquired within a conceptual scheme that is peculiarly its own.

The relativistic approach and its criticism offered in the above paragraph contest the force and significance of conceptual schemes in organizing and relating the content of experience. Hence both assume and operate within a duality of conceptual scheme and empirical content. Donald Davidson has criticised this duality, arguing that it 'cannot be made intelligible and defensible', and regards it as a dogma of empiricism.⁷ What is more directly relevant to the present issue within Davidson's general reasoning is his maintaining that *it makes no sense* to say of two languages, differing radically in their conceptual schemes, that they fail to be translatable, once these schemes are

⁶ Quine remains an empiricist in the sense that he allows a basic empirical common core, though he thinks that this leaves theory underdetermined. See 1960, chapter 2.

⁷ 1984, p. 189. See Quine, 1981, pp. 38–42, for a response, and for the genealogy of the term 'conceptual scheme'.

grasped as tools that organize empirical content. Maintaining or rejecting, as we did in the previous paragraphs, that a language has predicates whose extensions are not matched by those of another is possible only to the extent that there is an ontology common to both (Davidson, 1984, p. 192). Furthermore, to suggest that the manifold of experience is organized differently by another language hangs on our identifying the elements of the manifold in our own language. Thus even the very first attempt to express the difference of another scheme fails to make sense, for such enunciation needs to be made using one's own scheme. Such an idea is, therefore, incoherent.

Davidson's intended conclusion is not, of course, that since the idea of radically different conceptual schemes supposed to organize experience makes no sense, then relativistic anti-essentialism is unfounded. I have, however, some difficulty in seeing how he can avert such a consequence apart from making the blunt statement that 'if we cannot intelligibly say that the schemes are different, neither can we intelligibly say that they are one' (1984, p. 198). By imposing his skeptical restrictions Davidson seems to debar himself from a positive demonstration that the content of experience has no inherent order, which is a common and invariable object within different conceptual schemes. No doubt, he would carry on indicating that the concept of a common and autonomously ordered experience cannot be given a significant expression. *Pace* Davidson, however, I am unable to find such type of argumentation decisive. Even if we granted the thesis that there can be no thought without language, and thus agreed that what cannot be clearly expressed cannot be clearly thought, I do not think an impossibility relating to the object of such a thought would thus be demonstrated. The predicament concerns having to say something about the mutual status of languages as regards experience, and it cannot be said clearly in a language since it must then be said from within a language. But the obstacle arises here because we require that language should express what, due to its very nature, it is ill fitted to express. Nevertheless, the limitation belongs to expressive capacity. It does not derive from the nature of what is aimed at being expressed, as, for instance, it does from the nature of a logical inconsistency. Hence Davidson's remarks do not affect the possibility of there being an ordered 'given' of empirical content of which different conceptual schemes make somewhat differing ontologies, and to which we cannot give a clear expression in our language. But

if experience does have an ordered content, then there is a common core of ontology confirmed by experience.

Unlike the foregoing approaches, what I call 'materialistic anti-essentialism' is a realist position. It accepts the notion that a physical world of particular bodies exists independently of the understanding, but it interprets the world of objects nominalistically: it denies that in the external reality bodies fall under different natures or kinds. On this view, the understanding makes 'objects' out of bodies by imposing essences on them. No doubt particular bodies undergo change, but objectively all that happens to them is alteration. Bodies themselves are not destroyed. In fact, nothing is completely destroyed so long as its material parts remain: the distinction between alteration and substantial change is artificial, that is mind-dependent, and hence there are no kinds or essences in the objective sense. The impression that there are objective kinds and substantial changes derives from the projection of our conceptual scheme onto reality. These kinds are dictated by our humanly and culturally determined practical interests, and thus are all matters of convention. Since we decide the nature of change on the basis of the latter the difference between alteration and so-called substantial change is an Aristotelian illusion.

This point of view depends on two assertions which the essentialist must refute. (1) The same body could be classified or conceptualized in more than one way, and (2) Through time, the same body could fall under different (and simultaneously incompatible) kinds: the chunk of wood constituting a chair could later be used in making a table, and still later, a cradle. It could finally be carpentered back into the same chair, arranging the parts according to the original plan. Both assertions reject the existence of objective formal restrictions individuating physical entities. Their refutation will affirm and qualify the theses mentioned at the end of the last section. The first concerns specifically identity at a point in time, and corresponds with the thesis of Relative Identity we have discussed in 4.1.3. Essentialists such as David Wiggins criticize it by pointing out that either the different kinds under which that same body can be subsumed would coincide, that is, apply to the same thing over exactly the same stretches of time, or that (1) flouts Leibniz' Law, and hence involves a logical impossibility. For one and the same thing to allow conceptualization under sortals that do not coincide is for it to possess incompatible attributes. If at a given time objects *a* and *b* are identical under *F*, then it is not

possible for both not to be the same G if one of the two is a G. Saying that such a thing is possible is to allow that the very same entity a (or b) is an F, and is and is not a G.⁸

Now for the intuition underlying (2). Supposing we have a chunk of bronze which is now a garbage bin, but which was a statue in the past, does it, above all, follow by transitivity that the bronze, the statue, and the bin are identical? The answer is 'no', for the bin and the statue are not contemporaneous, and there are no stages of the two that coincide. But the same chunk of bronze was and is these things, in the sense that these were the successive forms, or stages of the bronze. In other words, there was no statue over and above the bronze possessing that shape, and there is no object such as a bin, over and above the bronze that constitutes it. In response, essentialism objects to the idea that the statue and the bronze are one and the same thing merely because the two occupy the same place at certain times. Even though they cannot be individuated separately and distinctly at such times there would be other time stretches through which the bronze does not constitute the statue, and there might well be yet others over which the statue is no longer in bronze, the latter being gradually replaced by another material (see Wiggins 1968, pp. 90–5). Hence, when complete careers are taken into account it becomes manifest that the overlap is only partial. Over the stretch that they overlap, they are to be said to cohabit, and as discussed earlier the two belong to kinds of different levels, and during cohabitation they have all their qualities the same. Moreover, there must be something, some matter, out of which the statue is made. This observation specifies one of the senses in which the Benign Doctrine of the Substratum is indispensable. In the same sense, the man Aristotle and the collection of cells that constitute him are not identical. Throughout Aristotle's career the cells have been renewed several times, and one such collection survived the death of Aristotle: it was not Aristotle himself who was buried, only his corpse. Therefore, in such cases the same body did not fall under incompatible kinds; the same body cohabited with different, and simultaneously incompatible objects, one after the

⁸ See Wiggins, 1980, pp. 137–8. Concerning anti-essentialism that reads all general terms, including sortals, as 'adjectival', I tend to believe that with suitable adaptation, similar points will apply to it as well. Leibniz' Law applies to all attributes of objects including properties. The hierarchy of sortals in the form of genus and species finds a parallelism in the hierarchy of determinables and determinates.

other. In the above described situation there were no Protean changes; they plainly amounted to the generation and destruction of different objects made out of the same parcel.

7.1.2 *Essentialism as an empirical thesis*

Having upheld a thesis that in the objective world there are formal restrictions particular things cannot violate without losing their identity, essentialism generalizes these to all possibilities. Once we grant that Aristotle is a particular object not identical with the collection of cells constituting it, the question arises whether that same object could be a different kind of thing, or indeed, a different particular. Given different circumstances, could Aristotle be classified under a different kind? Could he fail to be a human, for example? Moreover, could he fail to be the particular he is? Essentialism influenced by Saul Kripke maintains that both of these ideas are inconceivable.⁹

First, in view of the historical fact that a particular man born from particular parents and named 'Aristotle' became the particular philosopher whom we know from his deeds and intellectual work, anything else, however similar to the actual Aristotle, could not be identical with him. This would hold equally well even under the rather remote possibility that all the philosophical texts we attribute to Aristotle turned out to be the work of an 'artificial intelligence' in his possession. Although Aristotle's work would then be said to be produced by a machine, Aristotle himself would not thereby be said to be that machine. Of course, he could have been different in kind, for he might in fact have been an alien creature right from the start, disguised as a human. But these are circumstances under which, unbeknownst to us, Aristotle was an individual of alien ancestry, and hence it was not true that he was as we thought we knew him to be. Being actually the alien he was, he could not be

⁹ Some essentialists use *conceivability* as a criterion for deciding whether something is possible or necessary. See Kripke, 1972, pp. 318ff., esp. pp. 302–22, and Wiggins, 1980, pp. 105ff., esp. pp. 115–17. But cf. Putnam, 1975, p. 233. Counterfactually, water might not be H₂O in this world, and we may discover such a thing. But then, 'might' here is used in an epistemic sense, and conceiving such a case is not to conceive what is logically impossible. If, however, water is *in fact* H₂O, then the circumstances under which this does not hold true are inconceivable. See Kripke, 1972, p. 320, and Putnam, 1973, p. 709; 1981, pp. 46–7.

a man, even if there was a human competitor who bore a close similarity to him.

Once we grant that Aristotle was what we think he was, it seems to follow not only that he could not fail to be of the kind he was, whatever the circumstances might have been (see Kripke, 1972, pp. 310ff., Wiggins, 1980, pp. 116–17), but also that he could not have been an individual other than the one he actually was. As Kripke emphasizes, Aristotle might have failed to do all the things he is known to have done, and might instead have done all sorts of other things. But these are not circumstances under which Aristotle would not be Aristotle. These are merely cases in which Aristotle's life would have developed differently from the way it actually did.

An important characteristic of contemporary essentialism is that it distinguishes between the epistemic and metaphysical aspects of necessary properties. The *knowledge* of natures and their *possession* by individuals are different issues, and such knowledge is *a posteriori*. It is by empirical means that we discover natures, and 'necessary' does not mean '*a priori*'. Since essentialist claims about objects are not *a priori*, that they might be found to be false, or that they might turn out to be different from the way they were supposed to be, does not refute this doctrine. The apprehension of what natures are and the specification of necessary traits are scientific tasks. Philosophy argues *a priori* that there are objective natures of things and other essential traits, but the specification of how, and which ones, cannot be part of its goals or achievements.¹⁰

There is a persuasive argument that reasonings in support of *a posteriori* essentialist claims involve essentialist assumptions themselves not *a posteriori* (see N. Salmon, 1982). According to the most influential version of *a posteriori* essentialism our discovery of kinds proceeds as follows: we begin by selecting a specimen from what

¹⁰ I do not think that the existence of isotopes presents a problem for essentialism. Although isotopes are quite closely similar in atomic structure, they should be regarded as different natures displaying exactly similar chemical behaviour. The important thing is that isotopes manifest the order and regularity of essences, and are not arbitrary at all. This case exemplifies how *a posteriori* essentialism brings refinement to what would otherwise be a crude 'stereotypical' essentialism, an approach the classifications of which are based on mere surface chemical behaviour. Exact similarity in chemical behaviour does not make the isotopes identical any more than manifest similarities make elements (e.g., gold and pyrites) identical. Analogously an alien species looking exactly like our tigers, and placed here clandestinely by Martians, may have been called 'tigers', without this rendering the nature of the actual tiger arbitrary.

appears to recur in the world as a kind, carry out a scientific investigation into the most important properties of it, and then claim that the crucial properties we have thus determined belong to every other member of the kind, in every possible world. To be able to draw this conclusion, however, one needs the true suppressed premise that the properties discovered constitute the nature of every specimen of this kind, that being a sample of that kind consists in possessing just those crucial property-types.

If we take gold, for example, discovering through empirical research that the number of protons contained in the atoms of a particular chunk is seventy-nine will yield the conclusion that every sample of gold in every possible world has this atomic number only if it is likewise true that being a sample of that kind consists in having that same number of protons in each one of its atoms. Dispelling vagueness, Nathan Salmon phrases the suppressed premise¹¹ as follows: 'Given any number n and any possible chemical element z , if it is merely *possible* that some sample of element z have exactly n protons in virtually all of its component atoms, then it is *necessary* that every sample of element z have exactly n protons in virtually all of its component atoms' (p. 189). No objection is made here to the effect that such a proposition cannot be *a posteriori*. On the contrary, according to Salmon some versions of this proposition are to be 'more plausibly regarded as *a posteriori*' (p. 264. See also pp. 253–60). The gist of his point is that such versions are themselves loaded with essentialist import, and that they can be said to be known *a posteriori* only on condition that they are buttressed by what he calls 'connecting statements' of the form 'Given that chemical elements are *in fact* distinguishable by a number of protons in their component atoms, i.e., by their atomic number, every element is such that if it *might* have a certain atomic number n , then it *must* have that atomic number n ' (p. 263). The same point reveals that the essentialist theses used as premise have a metaphysical aspect, for the connecting statements they lean on in their empirical confirmation are irreducibly metaphysical (p. 264). Salmon then applies similar ideas to individuals' original construction (p. 265): he declares that the essentialist tenet that the original portion of stuff out of which an individual is made

¹¹ Salmon notes that the premise was first advanced by Donnellan in two unpublished papers delivered in 1973 and 1974. See Salmon, 1982, p. 163.

is necessary to that individual's original composition requires a similar prior essentialist assumption.

I submit that even though Salmon's claims apply correctly to the so-called 'shareable essences', they do not follow for particular essences as form-tokens. An important difference between these two is that while the former involves 'consubstantiality', the latter does not. While the relation, therefore, between a specimen and its shareable kind is given by the 'is' of predication (p. 99), this does not hold between a thing and its particular essence understood in the qualitative sense. What gives rise to the premises under discussion in reasonings leading to *a posteriori* essentialist claims is just that relation, and owing to it the essentialist must assume that the scientifically determined feature of a selected specimen applies to every other individual consubstantial with it. A particular essence, on the other hand, is a constituent of a particular object, not in the sense of a mereological part, but in that an object contains the whole (application) of this essence in it. There are no other consubstantial objects subsumable under that essence. Moreover, since a particular essence cannot be instantiated in any other particular, if it can be granted that this essence entails its object's original chunk of matter, we can conclude that the latter is necessary for this object, without this conclusion relying on any prior essentialist assumption. I shall treat this more fully in 7.3.

To sum up, materialist anti-essentialism distorts the commonsense perceptual picture of the world with a severe 'philosophical' prescription, relegating the objective individual to the parcel of matter said to constitute it. In contrast essentialism adds to objective compresences of qualities the articulation of objecthood, raising them beyond the status of formally indifferent parcels. It allows ontological sense to be made of the content of experience in consonance with its perceptual interpretation. It should be noted that the adoption of *a posteriori* essentialism does not automatically guarantee the latter's consistency with empiricism: the question remains whether such a position can be maintained without assuming the existence of unobservable principles. One basic tenet of the present study, reflecting its empirical commitment, is that anything we conceive as shareable is conceptual. That there is nothing shareable in the physical world does not, however, mean that there are no essences. As shareable principles, essences are mind-dependent. If, on the other hand, there is to be an ontological

sense in which articulated objects such as living beings and artifacts individuate and remain identical through time, then there must be objective essences. I maintain that objective particulars possess their essences particularly. In the next section I shall try to substantiate some of these points.

7.2 FORM-TOKEN AND NATURE

I shall defend the view that objects possess their essences exclusively; the latter are both necessary and sufficient for individuating them through time and across possibilities. Accordingly, essential properties individuate an object, for they restrict the possibility of change it may undergo while it retains identity, imposing limits demarcating it from other particulars. On the other hand, they help us to make ontological sense out of the striking regularity and order of the world of concreta as it reveals itself in perception: no other metaphysically coherent position makes equally good sense out of this empirical fact. For a clearer understanding of the ontology of such necessary aspects I will tackle the following questions. First, what should essences involve in order to individuate objects through change and across possibilities? Second, in what sense are essences common to different individuals falling under a given kind? And third, what sort of qualitative collections are essences, and why do they manifest themselves in a 'recurrent' manner?

Earlier I argued that within a world and at a certain point in time, an object individuates by all its occurrent properties at a certain position. Through time and across possibilities, on the other hand, we must allow for differences in properties. In the opening section of this chapter I have discussed the plausible Aristotelian account that if an object changes properties the loss of which amount to having changed its kind or nature it becomes a different one; it loses identity. Hence retaining a collection of features that together constitute a nature is a necessary condition for an object's prolonged identity, in spite of the qualitative differences inflicted on it. But are the same features sufficient for the object's identity? Can the kind or nature individuate the object through time and across possibilities? Clearly not, since a common nature cannot distinguish between the particulars falling under it; every individual of a given kind shares with every other all the features that together characterize this kind. For such a sufficiency,

the usual method has been to supplement essential properties with spatiotemporal continuity. But as I have shown in 5.4.2, even this is not enough to individuate a thing undergoing differentiation. The reason is not that there can be more than one particular throughout the entire stretch of a spatiotemporal path under a given kind; no such thing is possible. Yet succeeding portions of this spatiotemporal path under the same kind can be occupied by different particulars. A continuous object may become a different one, losing its identity without changing its kind. For example, as I noted earlier, a table may be gradually changed in form such that although it is still a table, it is not the same one. The point applies to any other artifact: it is possible to so modify the traits of such an object that although continuous and still the same in kind, it will no longer be the same individual. A second reason why we need a more precise 'individuator in spite of difference' is that within different possible worlds the spatiotemporal path of one and the same object may differ widely. Instead of staying here, for example, I might have travelled to many places. What is more, there can be no 'paths' linking the careers of objects across worlds. In view of these reasons and some others, I have proposed the notion of 'form-token' as individuator in spite of difference, and will return to it in 7.2.2. The third question posed above will wait until the final section of this chapter.

Now to the second question. That essences are common natures shared by a multiplicity of things is a well-known Aristotelian thesis with Platonic ancestry. On this approach, 'sharing' or 'having in common' renders distinct individuals identical in nature, making them members of the same kind. Many contemporary essentialists adopt this view (see Wiggins, 1980, p. 120; Armstrong, 1978a, chapter 11), and rejecting transcendentalism they treat shareable aspects as *in rebus*, that is, as immanent, built-in attributes of particular entities. This makes the essence a necessary aspect of the object's form, or alternatively, as in Aristotle's own position, identifies it with the form.¹² Against the latter, it can be said that any primary substance has a particular complete form comprising its accidents as well, so that even objects belonging to the same kind differ considerably from one another in their properties. So if the complete form can be regarded as including every formal aspect of a thing, objects belonging to a certain

¹² *Metaphysics*, vii, 17. If every accident belongs to the form of the underlying substance, then the object's form comprises the essential attributes only.

kind will be said to have different particular complete forms, only parts of which are common to the members of that kind. According to a well-known tradition that includes philosophers such as Aquinas, Ockham, and Locke, this common aspect, or at least its 'nominal' reflection, is discoverable by abstraction, and is a concept (see Locke, 1961, vol. 2, pp. 17ff.).

7.2.1 Resembling particular essences

Speaking of natural kinds, Aristotle points out that the *infima species* are given by the nearest genus and the marking differences of the species under that genus. Such *differentia* are among the essential attributes. Since every genus is, to its super genus, much as a kind falling under it is to that lower genus, we may construe any genus in terms of a higher genus and the relevant additional *differentia*. Thus what is implicit in Aristotle and seems widely and explicitly accepted today, is a construal of the essence as a conjunction (or, according to some, a family, a disjunction) of attributes. Roughly, the latter will correspond with the *differentia* added to every super genus that the relevant lowest species falls under.

According to this tradition, therefore, essences are, on the one hand, identities or common aspects among individuals, and on the other consist of 'families' (or collections) of qualities. This requires that such families, or at any rate the constitutive qualities of them, be specific, precise and unique. Identity cannot hold between indeterminate relata; such a thing will lead to the violation of Leibniz' Law. In order to show that shareable essences cannot fulfill such a requirement I invoke an argument I used in chapter 6. First, simple properties. Identities said to underlie different respects of properties cannot be specified uniquely. As we have seen in 6.2.1, retreat to higher-order identities has undesirable consequences, while it fails to yield the precision required by the notion of shareable essences. As to the common aspects embodied in the so-called 'partial identities', in 6.2.2 I have argued that, under a respect of property, indefinitely many identities can be specified, and that meticulous analysis of resembling properties lends no guarantee that a unique and specific identity can be found. Instead the matter may very well concern a disjunctive cluster of a number of features. I think it emerges here that determinables are indeterminate, and that the specification of determinates

yields an indefinite proliferation of properties which turn out to be highly difficult to relate by common features. These points summarize some of the obstacles involved in the tenet that properties are identities. In the case of essences understood as families of interrelated groups of properties, the difficulty of specifying what is identical uniquely and precisely multiplies in a corresponding way. I think there is no coherent sense in which one can proclaim that essences are objectively identical among different individuals.¹³

I submit that the actual relation that holds between the members of a kind is resemblance, not identity, and the so-called common aspects or identities among such particulars are resemblances, nothing more. What looks, conveniently, like a common feature turns out to be a similarity between objects' particular aspects. What the mind abstracts from several things with resembling determinate properties is not itself precise, and cannot be an identity in concrete things. No doubt, classifying individuals under kinds requires that resemblances among objects be treated as identities, but such a thing is achieved at the price of taking shortcuts and thus imposing a degree of distortion. The price is negligible, however, in return for its great convenience. There are no objective or real shared essences; the latter are mental creations and hence concepts. As Aristotle proposed, essences are objective and *in rebus*, but contrary to his opinion, they are not universals. As universals, essences are concepts only. Particulars bear resemblances not only in possessing properties but also in possessing certain (patterns of) properties invariably together, persisting through time and in every possible world.

If only the particular essence is real and common essences are conceptual, then why do we need, within a sufficient condition of identity through time, to specify a sortal concept additional to the form-token? From an ontological standpoint, adding such a concept is indeed redundant. Being a summary of resemblances, however, the sortal indicates limits of change beyond which the form-token and type will be lost. It provides condensed information concerning properties the resemblances between which must be present in different particulars by classifying these in a hierarchy of kinds. The sortal and the kind it expresses are criteria more of identification than of identity.

¹³ See Forbes, 1985, pp. 148–52, for a positive argument in support of individual essences capturing identity in spite of difference. See also Slote, 1975, p. 7.

7.2.2 *What does the form-token include?*

I return to the first question: what should essences involve in order to individuate objects through change and across possibilities? I have declared that an object's form-token individuates it in spite of difference. Such particular essences are configurations of functionally relevant properties which, in mutual resemblances, give rise to our concepts of shared essences. The particularity of a form-token involves three aspects: the qualities it embodies, the particularity of such qualities, and the particular configuration of them, *qua* the configuration of object parts they make in compresences. The latter point was discussed in 5.4, and in chapter 6 it was argued that real properties are particulars. I shall now remark on the variety contained in a form-token. I have emphasized before that the form-token comprises exactly the same variety of elements as the specific plan or the form-type. The complete form has everything the latter possesses, but not *vice versa*, and painting a car a different colour or denting it, for example, is not to destroy its specific plan, though it changes the complete form: such constancy within change is part of the basis of identity, for there is an intimate connection between what an articulated particular is, and how that particular functions. The qualities of the parts that do not contribute to the functional arrangement of the object do not make up part of the form-token: they are accidental. The colour of a car, for example, unlike that of a painting, makes no contribution in this sense. Aristotle often characterizes the form as the plan of the structure, and again, he often accounts for the structure in terms of function. Clearly, he incorporates the function into the form (Ross, 1959, p. 170, and Ackrill, 1981, pp. 46, 122).

Function is an integral aspect of form, and the irretrievable loss of an attribute that subserves an object's principal function brings about its destruction. The way an artifact functions is part of its nature and anything that looks exactly like it but cannot function in the same way will not be of its kind. The model of a car is not a car. This observation is equally valid for articulated natural kinds, since they function as organisms. Stuffed animals, or models of them in wax, are not the sorts of objects they represent. That the form-token consists, at least partly, in the specific character contributing to the structure that subserves the individual's function explains why changing the

material composition of an object is admissible only within certain limits. Replacement of the material of a chair by other wood or even metal is admissible, like the renewal of the cells in an organism. But a chair will not survive a change into rubber; at best it will have become an instrument for practical jokes. A completely 'bionicized' man is no longer the same individual; as a robot, it has a very different internal structure.¹⁴ Aristotle offers a vivid illustration of this point: 'it is necessary, then, for it to be made of iron, if it is to be a saw, and to do its work' (*Physics*, ii, 9, translation by J. L. Ackrill). If an object having that same shape were made of wood, it would not be a saw, but only a model of one.

The object is the form-token enriched by accidents; their relation is constitutive. Though obviously not in the sense of a mereological part, the form-token is an inseparable constituent, a constitutive *aspect* of the object. Only one object is an instance of any given particular essence, and any object having this form-token cannot fail to be identical with that object. But could the form-token of a particular object A not belong to anything else? Suppose it was accompanied by very different accidents. Would it then not constitute some other individual, say B, differing considerably from A, in both quality and composition? A and B would not thereby be different individuals: differing in their accidents but sharing their form-token, they would be merely different spatiotemporal stages. For reasons discussed earlier, A and B cannot share the same spatiotemporal position in the same possible world even though they share their form-token. In sharing their form-token, however, either A and B will be the different stages of the same continuant, or one will be a possible version of the other, identical across worlds.

Quine has thrown down the challenge that since across worlds there cannot be spatiotemporal continuity, in that context essentialism is deprived of a fundamentally important criterion on the basis of which it makes claims of identity through time (1981, pp. 126–7). Sharing the same form-token or a merely continuous form-token is not and cannot be meant as a continuity across possible worlds. Continuity of form-token requires that the object have, within a

¹⁴ The sameness of form-token ought not to require the sameness of the parts, or of their material composition, for this is a formal criterion. The parts should, however, be preserved in their form-type. The loss of a functionally relevant part will destroy the sameness of the whole's form-token.

world, a spatiotemporally continuous career which retains the basic functional structure and the distinguishing characteristics between any of its temporal stages and its origin. For any two such paths to be identical across worlds, they must have the same origin. Such common origin may be in the same world, that is, prior to the branching out of possibilities. But it may also be in different worlds; it may occur after the branching out. For these things, then, sameness of origin consists of sharing their original matter, their specific form-type, and moment of origin, and possession of these characters together at a later point in time amounts to their sharing their form-token.

7.2.3 Essences and individuator

Do we have to account for the essences of artifacts in terms of the notion of form-token? Has it not emerged in chapter 5 that what requires this, M-identity, the state of an object the stages of which have the same form-token, is just one of two notions of identity? Are there compelling reasons for not erecting such essentialism upon C-identity, where the object's different stages share merely the same form-type? If the latter path were pursued, no commitment to particular essences would arise. Would kind-essentialism not be validated if the sameness of form-type under a kind were chosen as the criterion of identity through time?

The first reason why we cannot found essentialism upon C-identity is that the latter is a compromise put forward by some essentialists, a compromise with commonsense intuition in blocking anti-essentialism. It serves to give theoretical significance within essentialism to the intuition that objects before and after dismantling are identical, which at first sight seems to vindicate anti-essentialism. From this judgment the anti-essentialist infers that articulated objects are human conventions, and reality does not contain anything over and above parcels of matter which put on different forms. Against this, C-identity allows the treatment of the articulated object as 'real', and while it saves objecthood under a kind from being reduced to subjectivity, it makes its identity a matter that depends basically upon human convention. Furthermore, with C-identity essentialism pays the additional price of violating the principle that one and the same existence cannot have two

beginnings. Second, and perhaps more important, is that C-identity is not a generally applicable notion. As discussed in 5.4.3 it is not a necessary condition of identity, and as a sufficient condition it applies only in the problematic case of dispersal. Even then, rather than overriding, it functions alongside M-identity. This was explicit in the case of the Ship of Theseus, where the two concepts applied simultaneously, but without rivalry. Finally, even if a sortal concept is conjoined with it, the sameness of form-type cannot be sufficient for individuation through time and across possible worlds. If it were assumed to be so, any number of things having the same form-type and kind would have to be said, absurdly, to be numerically identical.

Adoption of essentialism does not automatically supply a definite principle of individuation in spite of difference. Whether an object possesses essential properties, and whether it can be individuated through time and across possibilities are different questions, mutually irreducible. There can be a theory, for example, whose only essentialist feature is a non-qualitative individuating principle that denies every other necessary property, and consequently also denies any form of kind-essentialism. Espousing the notion of 'bare particulars' would have this natural result. Indeed, the familiar opposition between the view of the 'substratum' and the crude Qualitative Account in the context of individuation at a particular moment in time has a clear counterpart in the context of individuation in spite of difference, among two rival essentialist camps.

On one hand, there is the so-called 'Leibnizian essentialism', a view individuating objects by their essence which comprises all of their accidents in addition to their nature. As things are, no doubt such essences distinguish every object from all others, for things do not tend to be exactly similar. Being purely qualitative, Leibnizian essences imply that things possessing exactly the same essence will be identical. In the context of the same world, at a given moment in time, we have blocked this undesirable consequence by conjoining position with the totality of the qualities, hence individuating objects by properties at a particular position. Across possible worlds, however, position can differ, and hence in the latter context a Leibnizian essence is clearly prone to identifying more than one entity with the actual. Such essences are 'shareable'. Not only can they not individuate, but as common aspects they are simply conceptual. Is the substratum account of particular essence, incorporating a mysterious

individuator, the only alternative then? Is a thing identical with itself in every possible world in virtue of a substratum it possesses? I will let no mysterious principle do ontic work! The way out, therefore, is to improve on the Leibnizian scheme. This cannot be achieved by appeal to form-type, since the latter bears every disadvantage of Leibnizian essence. But the form-token does individuate: as a purely formal criterion it is both Leibnizian in spirit, and immune from the undesirable consequence of identifying any other object exactly similar.

7.3 IMPLICATIONS CONCERNING THE ESSENTIALISM OF ORIGIN

As Kripke propounds it, origin essentialism is the doctrine that a particular object originally made of a parcel of matter could not have been made of another. Any object originally made of another parcel of matter would not be identical with this one, even if it were exactly similar to it, that is, even if the two shared their form-type or even their complete form. The doctrine also applies to living beings, for given some individual it could not have come from sperm and egg other than those from which it actually originated. Accordingly, the particular origin of an articulated object is among its necessary properties. The object possesses this origin in every possible world. Clearly, essentialism of origin should not be construed as a thesis about the present material composition of an object. This could be different, since the original stuff might, in time, be gradually replaced by another.

7.3.1 *Original matter and the form-token*

Here is Kripke's proof of the doctrine (1972, p. 314; see also Forbes, 1985, chapter 6 for a thorough discussion). Suppose we have a particular table, made out of a particular chunk of wood. Suppose, again, that there is another chunk of wood such that a table could have been made out of it at the time of our table's construction, though actually no such object was made. The question is this: could our table, not one exactly similar to it, but our table itself, have originated from the second chunk instead of the one from which it was actually made? For convenience, let us treat the case in the

language of possible worlds, conceived as alternative possible histories of the world (Kripke, 1972, pp. 350–1, footnote 56). In the actual world our table was made from the first chunk and no table was made from the second; we are asking whether there is a possible world in which our table is made from the second chunk. For this, we need to consider the possible worlds in which a table is made from the second chunk, while no table is made from the first. Is there any possible world ‘Andromeda’, in which the table made from the second chunk is identical with our table? Let us call the table from the second chunk in Andromeda the second table. Now, is the second table identical with ours? No, because there is a third possible world, Orion, in which our table is again made from the first chunk, while at the same time a third table is made from the second. Since the same concrete object cannot be present in two different places at the same time, our table and the third cannot be identical in Orion. Moreover, if two things are not identical, they are distinct in all possible worlds. Since the second table is identical with the third and, given the necessity of distinctness, the second table is not identical with ours.

Here Kripke makes two identifications. One is the identification of our table in the actual world with our table in Orion, and the other, that of the second table, in Andromeda, with the third in Orion. For his argument to be sound, such identifications must be valid. The first is uncontroversial, justified as it is because if we can make a certain table out of one of two distinct chunks of wood, we can also make it out of the same chunk at the same time using the other to make a different table. The second identification, however, has attracted criticism on the grounds that it can be justified by no principle other than the following essentialist tenet.

PR: If it is possible for a given table x to originate from a certain hunk of matter y according to a plan p , then necessarily any table originating from hunk y according to precisely the same plan p is the very table x and no other.

(N. Salmon, 1982, p. 211)

This seems to entail that the sameness of original matter, along with the sameness of plan, is sufficient for the identity of things. Now the actual thrust of the criticism is that PR leads to logical difficulties in cases analogous to that of the Ship of Theseus. According to it we should identify the old ship with both of the existing ones. The undesirable consequence is that numerically different objects can

originate from a numerically identical parcel of matter. The criticism concludes that PR cannot be a sufficient principle of identification across possible worlds.

I cannot see this as a decisive argument: PR is made to depend upon the notion of C-identity, and the difficulty just described results from that. Why should an origin-essentialist adopt the notion of C-identity in lending foundation to his claims? This would be obviously self-defeating, and criticizing origin-essentialism from the assumption that it conceives of identity as deriving from the sameness of form-type is plainly circular. C-identity is not compatible with origin-essentialism, and to be consistent the latter must hinge upon the notion of M-identity. What is needed, therefore, is a rewording of PR in terms of 'Any table originating from hunk γ and which has the same form-token', and this will block the identification of the old table with the third one, made out of the discarded planks. Here a new question arises: what are the conditions under which a table having the same form-token will originate from the same chunk of wood? Answering this requires the incorporation of the object's time of origin into the picture.

What is it to execute a form-token on a body? A plausible answer is that this consists in applying a specific plan to a given parcel of matter by a particular process consisting of particular events which together amount to the making of the individual. It should be clear, however, that specificity does not entail particularity. A specific plan can be applied in full detail not only to an indefinite number of different bodies, but also to the same body at various different times, through different particular processes of execution: the resulting objects will be identical in form-type. But if that specific plan is applied to the same body successively, the form-tokens thus generated will not be identical. A car that is assembled, dismantled, and reassembled a number of times, and the successively repeated process of melting down and shaping a chunk of bronze in the same mould exemplify the point.¹⁵ I will maintain that a form-token is a form-type executed on a particular parcel of matter at a particular time. Let us acknowledge that since we are considering form-tokens being executed on the same particular body, in the same world it is not possible to apply a new form-token without destroying an already existing one, even if

¹⁵ The case is analogous to that of a watch going to the workshop, where it loses its form-token, but retains its form-type.

the latter are identical in type. Might it not be retorted, then, that what makes these form-tokens different is not so much the fact that they are brought about at different times, but rather that each has to be destroyed before a new one is applied? It may also be added that in a possible world, a different moment of origin, that is, a different particular process of application of the same specific plan to the same body at a different time, will not yield a different form-token. If this is granted, it will also follow that a different time of origin is compatible with M-identity, especially if we prescribe that in that world the same specific plan is applied to that body for the first time. Hence it will be pointed out that a different event of execution of the same specific plan, occurring at a different time, does not entail that the form-token or the object will be different.

Such reasoning can be circumvented by generalizing the successive execution of the plan to possible worlds. Consider, then, the following argument. Given the actual world and two possible worlds Andromeda and Orion, suppose that at t_1 in the actual world, out of certain material parts we construct an artifact, say a car. In Andromeda at t_2 , out of the same material parts we construct a second car according to the same plan as that of the first. The question is whether the first car in the actual world is identical with the second in Andromeda. That this is not the case can be seen by considering Orion, where the first car is again made out of the same material parts at t_1 , dismantled just before t_2 , to be reassembled at t_2 into a third car strictly according to the plan of the first one existing in the actual world. Now, since according to M-identity the first car is not identical with the third in Orion, then by the necessity of distinctness the first car will not be identical with the second in Andromeda, for the latter is identical with the third in Orion.

Note that the argument works by treating PR as a sufficient condition of identity across possibilities. Accordingly, not only do we identify the first cars in the actual world and Orion, and those in Andromeda and Orion, but also the first car and the third in Orion. By the necessity of distinctness, however, we then reject the latter identity. This points to the fact that PR is not rigorous enough, and that it needs some further restriction. Note also that the present argument can be generalized to every other possible world in which a car is obtained by the execution of the same specific plan on the same material parts at any time different from that of the execution of the

first car in the actual world. Any beginning of a career other than the actual allows a second beginning of existence, hence a different object with the same original matter and the same specific plan. I infer that the time of origin is necessary for a particular object. We have reason, moreover, to suppose that sharing with an artifact its original matter, specific plan, and time of origin is sufficient for being identical with it across possible worlds. I submit that the moment of origin gives us the further restriction we need for PR, thus allowing an efficient and dependable criterion of identity across possible worlds (see Noonan, 1983, p. 4). Of course, what this criterion basically captures is the transworld sameness of form-tokens. After all, the coming into existence of a form-token is simply the execution of a specific plan on a particular body. Furthermore, the object endures identically so long as it retains this form-token, identically, or merely continually, depending upon whether it is an artifact or an organism. Hence the criterion captures the identity of objects across possibilities by capturing the identity of their form-token.¹⁶

We can now return to Kripke's argument. With PR thus refined, we are able to block, on his behalf, the unwanted identification of the decaying ship and the one built later out of the discarded parts of the former. If the improved PR identifies form-tokens across possible worlds, thus offering a dependable sufficient condition of transworld identity for objects, then granting that Kripke's argument can be validly applied to any possible world, it establishes that the original matter from which an object is made is an essential aspect of that object.

7.3.2 The time of origin

The time of origin may not suggest itself directly as a necessary aspect of identity in spite of difference. In fact, the idea that such a necessity exists is frequently betrayed by everyday talk. For instance, 'If I were a young man (If I were twenty) now ...', 'Had he been a contemporary of Hume ...' are types of antecedent clauses that we use and seem to conceive rather naturally. I suggest that temporal counterfactuals are examples of inconsistent talk, just as some talk about time travel is, such as my returning (in the actual world) to a past time at

¹⁶ I submit that the form-token amounts to the execution of a certain plan on a particular chunk of stuff, at a particular moment (period) in time. If two things share their original stuff, their plan, and their time of origination, it follows that they share their form-token.

the age and condition I am in now. Once one begins to try to conceive how circumstances need to be for such clauses to be true, one realizes how problematic they are. Among other difficulties, they require thinking of an individual as yet unborn in the actual world, at a certain age in a possible world, and thinking of the same thing as being simultaneously at different ages in two different worlds.

Perhaps such thoughts are tolerable when they do not involve the extreme suppositions implying violation of the laws of nature. Are there not more plausible ways in which we may think of the same object as having possible origins at times other than the actual?¹⁷ I will describe two such mild cases, one applying to the world of artifacts, the other to that of living beings. Here is one: imagine a sculptor living in Nazi Germany. Suppose that in the actual world, at a basement studio he owns, this sculptor makes a marble bust of Moses during the second half of 1935. At the end of the same year, and immediately after the completion of his work, the worsening political circumstances oblige him to lock up the studio and leave the country. Right after the war, the sculptor returns home and, to his delight, finds his work intact. Now we turn to possible worlds. A first possible world differs from the actual in that the political conditions get worse three months earlier. So, the sculptor flees the country leaving his work unfinished, but brings it to completion by the end of 1945. In a second possible world, the artist is compelled to escape even before he begins working on the block of marble. So he carves the stone after his return, when democracy has been restored.

Since the three worlds are otherwise identical, we can assume that the specific designs executed are exactly similar, down to their minutest detail. Moreover, that the examples differ from one another by a matter of degree give us a hint of how one might justify a judgment concerning one world by introducing other worlds resembling the actual one more closely. Accordingly, if it is plausible to claim the identity of a possible statue almost finished in 1935 with the actual one, then there is reason for claiming the identity of a statue not even begun before 1945. Here is our question: granted the above three worlds, can we assert that the busts of Moses in them, on New

¹⁷ 'Without that crucial interrupting telephone call, for example, I and the chair I am sitting on would have been created just a bit earlier (and if there were no such call, there could have been one) ... It is hard to see that there are any uniquely held properties had by such objects that are had by them in all possible worlds.' Brody, 1980, p. 104.

Year's Day, 1946, are the same object, despite the fact that two of them are newly finished, while the third is ten years old?

Concerning the intuition identifying these statues, I submit that it either identifies the blocks of marble in place of the statues, or treats the unqualified PR as a sufficient condition of identity across worlds. As we have seen already, the former intuition is that of the anti-essentialist, and involves denying the existence of independent articulated objects over and above bodies. The latter, on the other hand, involves maintaining that identity across possible worlds can be based on the notion of C-identity. Leaving aside the difficulties already pointed out, neither intuition is consistent with kind or particularistic essentialism. For reasons now familiar, a consistent essentialist of the latter sort needs to think in terms of M-identity. In these possible worlds, part or the whole of the sculpture is executed through different processes consisting of a series of different event-tokens, and therefore, from the point of view of a consistent essentialist intuition, neither claim of identity can convince. Moreover, if, for example, the sculpture were made of a malleable material, it would be possible to destroy it after returning home, and rebuild it exactly according to the same detailed design.

Here is the second case: a child is developed from a zygote, the result of the natural fertilization of an egg by a sperm, ten years in the past. But that same pair of sperm and egg could have been frozen and joined only a year ago. Would we or would we not, then, say that the child of ten is identical now with that possible child of one? My view is that claiming identity in such cases will hinge, at least partly, on an analogous intuition that treats the organism as fundamentally the same as its material origin, that pair of sperm and egg. According to such an intuition, if through fertilization that particular pair grows into the specific form of the actual child, then it is the same thing as that particular child. We must repeat, however, that specificity is not particularity. A different occasion of form acquisition is a different acquisition of form-token, even though the two may be exactly similar in type. The intuition that rejects this derives from the concept of C-identity, which is liable to inconsistency. If, on the other hand, essentialism must adopt the concept of M-identity, then it must also embody the time of origin.¹⁸

¹⁸ Though I am not able to provide it here, I agree that there is an obvious need in this connection for further discussion concerning the *precision* of the time of origin and the nature of time.

7.4 ESSENCES AND STRUCTURAL PROPERTIES

Thus far, I have been developing the concept of essence in relation to articulated objects only. However, as a collection of invariant properties the loss of which entails destruction for a concrete entity, essence applies to bodies and quanta of matter also. As indicated earlier, bodies and their invariant properties are indifferent to the arrangement of their parts, their structure being totally irrelevant to their identity. The essences of bodies are 'amorphous'. What matters here is the co-existence of a number of properties; in the case of gold, resistance to acids, malleability, yellow colour, and so forth, regardless of configuration. Given the classification of concrete things mentioned in 5.2.1, we have two divisions that overlap only partially. On the one hand, we have the division between things having homoeomerous parts (bodies) and those with anomoeomerous parts, which are articulated objects, and on the other, between natural things and artifacts. Living beings are at the same time natural and articulated objects, and thus constitute the common element of both divisions. Now the notion of essence applies to each of the three kinds, but in a different way. We have not only articulated man-made essences and articulated natural ones (living beings), but also essences that are natural and amorphous (stuff kinds). Being a configurational principle, the form-token cannot account for the latter. Here I wish to discuss the third question I posed in 7.2, namely, what sort of qualitative collections natural essences are, and why they form classes of similarity. The answer I shall offer will also account for what I have characterized as amorphous essences.

What underlies the recurrent and repetitive appearance of the world is the fundamental ontic fact expressed in principle (5), 6.4.2, that properties spread through the universe as particulars which mutually resemble in differing degrees. Now I wish to explain why certain collections of properties, that is essences, also display an analogous pattern of resemblance. I will do this in two steps, appealing to the notion of 'essential saturation' introduced in 6.4.2 only in the second. First I use an idea of David Armstrong's: that the universe is populated by recurrent collections of properties is due, I affirm, to the existence of complex structural properties. Structural properties may or may not be relational, depending on whether their structure involves a pattern; within the context of my own enterprise

I will regard them as particulars.¹⁹ I shall also contend that a complex structural property is not a mere configuration, but one with a *unity*.

A relational structural property is said to be an enduring collection of component properties where the latter exist in a specific configuration. According to Armstrong, 'If a property is complex, then it has parts. These parts are properties and/or relations. We will call them *constituents* of the complex property.'²⁰ But to explain a *natural* essence, I think, a structural property should involve more than this. In chapter 5 we have described the form-token as the particular configuration (structure) of an object's functionally constitutive parts and properties. In artifacts, the properties making a certain form-token are held together simply by their *inhering* in the substance they constitute. Armstrong's characterization of a complex property does not unite its elements in any stronger way than this. A complex property envisaged in this sense will be devoid of a reason for any such thing's *natural* recurrence in other objects. Such configurations would recur either out of coincidence, or in mass-produced artifacts. The configuration of properties which marks a structural property that may account for natural kinds should constitute a single entity, a *unity* of its own. Only this, in conjunction with principle (5), may make sense of the recurrent existence of the rich variety of kinds in nature.

I maintain that a structural property exists as a whole in unity. As a single complex entity no part of it is detachable during its career of existence. The difference between a mixture of two parts of hydrogen and one part of oxygen in a flask and a corresponding amount of water in another vessel may illustrate the point. The former is not water, even though it may be so mixed that for every atom of oxygen in it there are two atoms of hydrogen.²¹ A water molecule is a unity and not a mere configuration of atoms. No doubt the example

¹⁹ Armstrong, 1978b, pp. 38–9 and 67–71, conceives of the notion of a complex structural property as a universal. In 1986 and 1989 he acknowledges the plausibility of structural tropes, but he does not give up his immanent realism concerning properties. For difficulties of the concept of structural universals see Lewis, 1986b. Mellor's (1991, pp. 179ff.) rejection of complex properties is meant, probably, to apply to structural properties as well. See Oliver, 1992, p. 95, fn. 7.

²⁰ 1978b, p. 67. Complex properties that are not merely conjunctive and/or homoeomericous can be structural: pp. 30, 38–9, 68ff.

²¹ For the sake of simplicity, I disregard the fact that liquid water contains various ions, along with H₂O molecules.

primarily concerns the mutual positioning of things and these are bonded by electrical and nuclear energies, but it also exemplifies what 'being a water molecule' is, and how in this the component properties stand in a unity: such a unity of component properties is not secured by fields of energy. Here is the second step of my account. I have suggested, in 6.4.2, that components of structural properties hang together by 'essential saturation', a condition of existence that has the effect of making each such complex behave like a simple property. If the concept of a structural property is to account for essences found in nature, this unitary character must be emphasized. The absence of such emphasis makes Armstrong's own conception of a structural property quite vulnerable. Without unity, structural properties would be mere complexes of properties, and then following Ramsey and Mellor, it would be possible to argue that either such alleged entities have no being beyond the existence of their components, or if they do, they cannot be consistently identified with the relevant logical connection of their components (Ramsey, 1990, pp. 14–15; Mellor, 1991, pp. 179–80).

Recently, in explaining the configuration of properties forming a structure that inheres in a substance, Armstrong has appealed to the concept of a 'state of affairs' (1989, pp. 88ff; for its application to tropes, see pp. 91, 117): among other advantages, identifying structures with states of affairs captures the configurational aspect of properties, and explains why properties are not related to the complex wholes (that is, to the objects or structures within which they exist) in the way mereological parts are said to relate to their sum. This does not explain, however, the apparent natural recurrence of structural properties. The notion of a state of affairs does not imply a unity: I and the table I am now writing on constitute a state of affairs, though there is no cohesion, no further unity that integrates us. Moreover, little is gained by applying the notion of a state of affairs in combination with that of inherence. Granted, the overall qualitative unity of an object may thus be accounted for, but then nothing in this will explain why in nature a vast multiplicity of resembling patterns inhere in different individuals.

Ramsey's argument against complex properties will apply to the concept of a structural property that falls short of being a unity, even if such a thing is regarded, along with Armstrong, as a state of affairs held together by inherence in a single object. Ramsey's own version

of the argument concerns propositions and not states of affairs; for this reason I present Mellor's adapted version of it. Roughly stated, it runs as follows: suppose there is a property W such that $(P \text{ and } Q)=W$. Then W and $(P \text{ and } Q)$ 'are the very same state of affairs. But they can't be, because they have different constituents. The first containing W but not P and Q ... So there are no such properties as ... W ' (Mellor, 1991, p. 179. Bracketed expressions are my interpolations.) How can this argument be blocked, once its first premise is accepted? One way would be to say that since the identity of the states of affairs W and $(P \text{ and } Q)$ is entailed by this premise (Mellor, 1992, p. 97), then they do not have different constituents; W is the same thing as $(P \text{ and } Q)$. But then W is *nothing* over and above P and Q , and thus such a move defeats the purpose of establishing the existence of complex properties. A second way involves inquiring into whether things with different constituents can nevertheless be identical, and doing this, in turn, invites examining how substances and properties can be said to be the parts of states of affairs. Here I will not elaborate this point any further. Instead I point out the possibility of a third and related way of forestalling the argument as it stands, this time by objecting to the first premise. It may be said that the premise does not take into account the way in which P and Q , that is the constituents themselves, are mutually related. One thing is the way components relate to the whole, and another is the configuration they are in. The very same items P and Q may or may not be identical with W according to how they are related to one another (Scaltsas, 1990).

My own response to the challenge is to accept that it rules out complex properties, as such things are conceived by Armstrong and others, including Ramsey and Mellor. I hold that, so conceived, a complex property is nothing over and above its constituents. As Mellor declares, 'a and b being P and Q does entail that a and b share a property – indeed two properties, namely P and Q . But this hardly shows that they share a third property $(P \text{ and } Q)$ ' (1991, p. 179). A *structural property* should not be understood, however, as a *complex property*, in the above sense. Rather than being the simple logical connection of its elements, a structural property is a unity that saturates them essentially. Thus the first premise of Ramsey's argument is not true of structural properties.

Given the Benign Doctrine, natural concreta embody structural as well as simple properties. This is why there exist natural kinds as

Object and property

classes of resembling objects. I have declared that only some essences are structural properties, and only some of the latter are relational. As Aristotle would keenly insist, only the essences of living beings are relational structural properties and hence form a substantial unity. Artifact essences are not structural properties, for the component properties of their form-tokens are held together merely in virtue of inhering in the same substance. Their repetitive existence under a same form-type depends solely upon their being designed and manufactured that way. Another indication is the practically limitless reparability of artifacts, making the application of the notion of C-identity to them intuitive. Destroying any part of an artifact will leave the other parts intact. In living beings and in chemical substances, the loss of a vital or essential feature brings about the destruction of others, and such a mutual dependence reflects the unity of the whole such features form.

As regards things that fall within natural kinds, a distinction widely drawn is between the essence apparent at the surface and the deeper nature. Roughly, the latter are what Locke called 'nominal' and 'real' essences.²² The surface essence is made of the invariant sensible properties of a thing. In living beings this is the configuration of the vital organs and their properties, and remains unchanging throughout the continuity of form. In bodies and quantities of stuff of various forms it includes sensible features by which we identify chemical substances and elements. Indulging in scientific theory briefly, we must bear in mind that the surface essence is determined by deeper features such as DNA molecules in living matter, molecular structures in chemical substances, and atomic numbers in elements. For bodies an interesting consequence ensues. As an integral quantity of matter, a body may be pure or a mixture. If pure, then it has an amorphous surface essence, a non-relational structural property. Its smallest parts, molecules in the case of substances and atoms in elements, are structured, however. The deep essence of a parcel of matter is therefore a relational structural property recurring in its smallest parts. Bodies differ from objects in that their essence does not individuate them: if homogeneous, every part of a body down to a level has the same essence as the whole. For individuation, sameness of essence must be accompanied by the sameness of parts through time. The

²² 1961, p. 43. See also Putnam, 1975, essays 11 and 12, for the notions of 'stereotype' and 'nature'.

latter thesis, often called 'mereological essentialism', and a favourite of Hobbes, does not apply to articulated things.

In the next chapter I will examine causation which, along with essence, is one of the two principles of natural order. The account of causation I will offer is basically the same as that explaining natural essences. In a nutshell, while a natural kind is a structural property whose components are distributed spatially, those of causation are distributed temporally. Order in the universe is owing to the existence of structural properties in groups of resemblance spreading all through space and time. Such an account provides an appropriate ontological background to Hume's analysis of the concept of a cause in terms of phenomenal constant conjunction. I shall argue that a plausible version of singularism, maintaining that a particular causal relation does not entail a regularity, is also satisfied by the present proposal, but that in this acceptable sense singularism does not reject the ontology implied by Hume's analysis.

8

Causation and particular properties

8.1 PARTICULAR CAUSES

Causation is essentially temporal because it relates events that succeed one another. Against this one may point out that causation can admit as terms states that are not necessarily extended in time, and that some causes and effects may be simultaneous. Even if the plausibility of these points is granted individually, the fact still remains that there will be no causal relation where both hold true together. It is owing to such temporality that in momentary empirical awareness causal relations cannot be sensed in their entirety. Representing the world on a spatiotemporal map however allows 'perceiving' them all at once, without having to live through the relevant occurrences. Such a map shows states as persisting conditions, and events or changes as the extremities of temporally extended properties that inhere in substances. Causation links changes or conditions that occur both within the same substance, and in distinct neighbouring (but not perhaps necessarily contiguous) ones. Just as there is a causal link between a given metal bar's growing hot and its melting down into an amorphous chunk, so is there a causal link between a live coal's being hot and a closely positioned object's gaining heat. Consistently with what has been defended in the previous chapters of this book, I shall designate states and events that can be terms of causation as 'property-occurrences'.

On the present particularistic ontology physical existence consists of particular properties and objects in which these inhere, and all generality is mind-dependent. My account will make no appeal, therefore, to universals as properties or laws, and this will safeguard me from the common attempt to explain away causal relations through the postulation of general principles, a methodology that in my opinion puts the cart before the horse. In general outlook I am in

agreement with, and a follower of, Hume who speaks of the 'regularity' or 'constant conjunction' of particulars, relating this to their resemblance (1969, pp. 221–2). I hope to sketch a plausible ontological background for the analysis of causation he offers in terms of phenomenal similarities. I believe that objectively a causal relation does not contain any special nexus or bond that conjoins otherwise independent property-occurrences, but it is not a matter of simple succession either. By a 'causal relation' I understand the whole made up of the cause, the effect, the spatiotemporal relation of the two, and the way in which such items are placed in this relation, for as in causation, when R is not symmetrical, the difference between cRe and eRc matters crucially. In chapter 6 I have argued that universals are concepts we form by summarizing objective resemblances that hold amongst properties. In this light I regard causal relation-types as concepts the mind derives from objective particular properties. Since a causal relation involves the diversity depicted just now I will treat the resembling properties upon which our various concepts of cause-types dwell as complexes.

8.1.1 Causation as a structural property

The account I propose will modify the notion of a structural property in a number of ways. As we discussed in 7.4, a relational structural property is, roughly, an enduring collection of component (constituent) properties where the latter exist in a specific configuration. My thesis is that a causal relation is a structural property the components of which are property-occurrences we designate as cause and effect. I am not suggesting merely that the terms of such a relation are structural properties (cf. Lewis, 1986b, p. 29). That may be so, but more importantly in my view, the whole of a causal relation, incorporating the relata and spatiotemporal configuration, is what I characterize as a *temporally diversified* structural property. I make the following qualifications.

A first point obvious from section 7.4 is that I view structural properties as particulars (see Lewis, 1986b; Campbell, 1990, pp. 45 ff.). Second, in the configuration of a structural property making up a causal relation the components are distributed in a temporally diversified way (i.e., different property-occurrences succeed one another), and such a thing contrasts with structures the

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components of which exist contemporaneously, either in an overlapping fashion (e.g., being yellow, malleable, fusible, and so on) or in a spatially diversified distribution (e.g., as in atoms in a molecule). As remarked earlier, the latter are particular essences. The temporal configuration of causal structures may partially overlap: the heating of the wax and its losing shape and colour somewhat overlap, while a billiard ball's receiving an impact and its starting to move seem to succeed without a gap. Both of the qualifications made this far are explanatory assumptions, and I shall not argue for them. The remaining two, however, require substantiation.

My third qualification is that the components of structural properties that account for causation do not always inhere in a single substance. Just as some occur in the successive temporal parts of the same object, some others are distributed in the successive temporal parts of two (or more) different objects that meet at a point in space and time: frequently we observe that objects approaching in space and time exchange influences of like features. For example, philosophers and scientists speak of the transfer of momentum and energy. This is a matter of a single structural property inhering in two objects, and the situation appears like a 'give and take', because it is perceived three-dimensionally, in succeeding moments of awareness. Moreover, there is nothing in the idea of a structural property that precludes different complexes' sharing some of their components. Quite the contrary, as in the case of someone *seeing* a billiard ball that *collides* with another, the same property-occurrence is often engaged in more than one causal relation, and this determines the existence of causal chains and common causes.

A line of objection might be thus: the idea that temporally distributed components of a structural property may inhere in different substances meeting at a point in space and time has odd consequences. Does a *simple* property F (e.g., momentum) in a substance *a* (a billiard ball) become retrospectively a different thing, i.e., *part of a structure*, by pairing up with a similar property G (momentum) that occurs in a substance *b* (another billiard ball), conditional upon *a*'s meeting *b* in space and time? Note that this is unlike the case of change through time where the inherence of incompatible properties in the same thing anchors to different dates. Here the very same temporal stage of some property is said to be and not be part of a certain complex. But the temporal stage of F,

prior to *a*'s meeting with *b*, should be what it is consistently, and its identity should not be 'revisable' according to what happens to *a* at a later time. Moreover, contingent upon the circumstances, *a* may or may not meet *b*, or meet another substance; does F then become part of another structure, by coupling with H, if *a* happens to meet *c* instead of *b*, or meets both of them? Should one describe the case as F possessing a potential, that is, a power to form a structural property with any substance that *a* meets? Or should one take a shortcut and merely rule that *a* was predestined to meet *b*? I shall respond by acknowledging that the second and third qualifications make the full occurrence of some structural properties conditional upon the meeting of the relevant substances. But this does not go much beyond reasserting the temporality of the type of structural property referred to. Anything that exists contingently, and anything that has begun, is completed conditionally upon the fulfillment of some relevant circumstances. Some temporally diversified structural properties 'pick' this condition as the meeting of two objects. F is part of something that saturates upon the fulfillment of further conditions, and this is consistent with F's being, as such, a simple.

In a basic sense, F is the very same thing regardless of whether it is simple or the component of a structure, and it does not change nature conditionally upon *a*'s meeting with something else. When the latter is fulfilled the structural property of which F is a component occurs entirely. What generally holds between whole and (structural) part applies here too. To choose an example from substances, the mouthpiece of a pipe would be exactly the same thing even if it were never attached to the bowl; in union with it, however, it functions as part of the whole's function. The same would apply if it were assembled with a different but matching bowl. Similarly, upon *a*'s meeting *b* (or *c*), the same F would function as part of the whole structure which has a further individual unity. When *a* meets with another substance *b*, a property G that constitutes a structure with F occurs in the latter, and hence completes F as part of the whole. Property F in *a* is appropriately describable as having a 'potential' to bring about G in *b* (or H in *c*), if this means that upon the fulfillment of the condition the remaining part or continuation of the structural property will be revealed. It is not to be concluded from this that F (or *a*) contains a mysterious power or necessity to produce G upon meeting *b*, or that since F has

occurred, *a* is predetermined to meet *b*. Here we confront the fact that existence is conditional. Looking at the spatiotemporal map of the world we observe that just as there exists no property in isolation from substances, some structural properties exist only where there is more than one substance in contact.¹

The fourth qualification I make in the idea of a structural property is that its components exist in a unity. In 7.4, I have argued that the existence of a structural property is different from the occurrence of its components in a corresponding isomorphic spatiotemporal relation. It is exactly in this sense that causal relations differ from coincidental temporal distributions of property-occurrences: just like an essence, a causal relation is a single entity, a whole in unity.

Have we not a difficulty now? On one hand the third qualification makes the full occurrence of structural properties conditional upon the meeting of substances, and, on the other, the fourth makes a structural property a whole in a unity. How can two components, one actual and the other not yet occurrent – and which may never occur if the relevant condition is not fulfilled – be a whole in a unity? I do not think this is a difficulty that specifically concerns the conjunction of my qualifications. The complaint applies to any present property or substance part of which has already occurred and the remaining portion of which is still to come. For example, do I now form a unity with stages that will have occurred by the end of the next hour, conditional upon my staying alive, and will then have

¹ The third qualification implies that temporally diversified structural properties fall into two sorts, one inhering in a single substance, and the other in more than one. The conditions necessitated for the completion of the latter are more stringent in that in addition to those relevant to the former they include the existence of *another* substance in contact with the first. The distinction is not arbitrary, however, and a structural property of the latter sort cannot 'saturate' in the same way as that of the former, i.e., within the same substance. One reason is that a complex of the latter kind is a structure the components of which are similar property-occurrences that fall under the same determinable: thus once a component property inheres in an object the other cannot exist in the same substance (condition (3), 6.4.2), and another substance is required for the fulfilment of the entire structure. The fact stands that unlike causation taking place within the same substance, the elements of a causal relation that connects different substances are similar property-occurrences falling within the same determinable. A live coal will heat up the piece of wax placed beside it, and the heated wax will change colour. Causal description that links the coal's radiation of heat directly with the wax's change of colour takes a short-cut, skipping the crucial circumstance that the darkening wax has reached a certain temperature. The transfer of momentum and energy amongst substances in causal interaction is not to be regarded as occurring alongside causation; it is a necessary stage, a link in the chain.

– no doubt – become *my* stages? This is a broader question concerning the philosophy of time, and I will not attempt to answer it here.

8.1.2 The ontic background of regularity and causal dependence

Since every property is spatiotemporally related to every other, any causal relation overlaps with a corresponding spatiotemporal property-configuration. But not all succession is causal, and some exceptions aside, we observe only causal succession to recur, that is to say, to exist as multiplicities of closely similar configurations that pervade the physical world. We conceive of such similarities as lawful uniformities. This characteristic of causal relations, I have claimed, is due to their being structural properties. Just as simple properties occur in universally spreading resemblances, some property patterns do too, thus forming what we call constant conjunctions. Structural properties are complexes in unity. As Hume has pointed out, despite the crucial difference between causation and coincidental succession there exists no epistemic qualitative criterion that reveals this.² Since the perceptual manifestation of relations is unlike that of qualities (see Ducasse, 1975, pp. 120–1), epistemic evidence for causation cannot be found in singular occurrences. The more implicit evidence, on the other hand, in the recurring resemblances of a property-pairing, fails to be conclusive, let alone mirroring a necessity. Causation gives rise to a philosophical problem above all because what makes it different from a man-made or coincidental pairing is empirically unavailable in a direct way. What I have said here does not imply that we cannot observe individual causal relations or their characteristic recurrence. We do observe them, but in a great majority of cases without seeing a distinguishing mark in them. Seeing causation is one thing; recognizing it as such, or having evidence for it is another. But there cannot be a philosophical account that uncovers for us hitherto unnoticed characters that would facilitate the discovery of causes. Placing the problem primarily under epistemic focus is, I think, misguided. Fundamentally, the issue is metaphysical, and if a plausible ontology is offered, epistemology may hope to benefit from its implications.

² 1969, pp. 123 ff., and pp. 213–14. Armstrong, 1988, p. 225 disagrees: 'I believe that we get the notion of (contingent) necessity from our direct experience of causation. *Pace* Hume, there is an impression from which the idea of cause is derived'.

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If, as I have suggested, a structural property is a unity bound up 'internally', it is also misguided to diagnose the difference between causation and mere succession as the existence of an external relation such as a special bond, or a nexus, that links the property-occurrences. The parts of a structural property cling together because of their nature. If bonds existed as component parts, there would arise, above all, a problem concerning how such components are linked with other parts.³

A bond alleged to link property-occurrences in a configuration would be something that either repeats itself in different structural properties, or is different in every individual structure. The latter entails a novel connection for every distinct structural property, and thus annuls the explanatory power of the very notion of a bond; it is a view with no theoretical economy. Furthermore, it acknowledges the unity of individual structural properties under a new name. If, on the other hand, the same bond repeats itself, it may do this in either a generally or a specifically universal way. If the same bond links the elements of every different structural property, it does this regardless of similarity classes, thereby rendering essences and causes arbitrary: such a generally universal bond can link *any* two properties whatsoever. Further, such a conception will not only fail to explain the actual existence of uniformities, but, allowing a chaotic world of unlawfully linking properties, will also fail to account for the existing universe. Finally, this suggestion paves the way for unique causal relations, an idea I shall address further below. A specifically universal bond would link nothing but like causes with like effects, and therefore an account subscribing to this notion would have to stipulate a different bond for every different uniformity. This too is not economical, and moreover it raises the question as to how a specific bond differs from others, independently of and without reference to the resemblance class to which it is restricted. A specifically universal bond shifts the problem rather than providing a solution; it is a total mystery and a theoretical extra. I conclude that in neither of its possible versions is a bond account acceptable. The three-dimensional perception of temporal property-configurations gives rise to the impression that cause and effect are linked by

³ This would be a Bradley-type regress. See F. H. Bradley, 1908, chapter 3; Armstrong, 1978a, pp. 106–7. Ramsey, 1990, p. 11, reports that in the 1920s Russell too acknowledged this regress.

elements additional to the relata of causation. But after the cause occurs the effect will occur, because part of a whole structural property has been observed, and the rest is still to come. The usefulness of a spatiotemporal map is in its representing temporal configurations fully, dissolving the mirage of bonds or powers.⁴

Structural properties are not primitives; their unity consists in their elements' saturating one another essentially. In 6.4.2 I have explained how essential saturation yields patterns of resemblance, where the likes of a property co-occur with the likes of another (or a number of others). While some properties that inhere in objects saturate one another essentially in a coeval way, and thus form these objects' essences, others do so in succession. Statements of natural laws express properties the resemblances of which link up in structures. They provide, among other things, information about which 'type' of property forms a structure with which other 'type'. Causal laws in particular depict the successive patterning of structural properties. It should be pointed out that just as it is physically impossible for any property to exist in isolation, it is also impossible for it to exist without contributing to temporally diversified structures, when other necessary conditions are also fulfilled.⁵ In the physical world there can be no causally inefficacious properties that fail to achieve essential saturation with every other property: there can be no property incapable of yielding a difference in something else or undergoing change because of something else.

One should not overgeneralize this point, however. Speaking of forming structures, it has been said already that a given property links up only with *some* out of indefinitely many other properties. Given a property of type F, only a limited number of property types such as G, K, or L can saturate it. Let us refer to these as the 'saturants' of F. In so far as temporally diversified structural properties are concerned, we may distinguish between saturants of greater and lesser affinity. F will form structures with some of its saturants invariably, while with some other types it will link up less often. If G is a saturant of F with lesser affinity, instances of F and G will exist in the same region of space and

⁴ Without offering any further argument I reject causal powers, forces, capacities and propensities as 'ontic principles' supposed to be contained in the cause. This is not to deny that such things are worthy of consideration. For valuable defences see Harré and Madden, 1975, and N. Cartwright, 1989. I shall not address this issue in the present work, however.

⁵ As discussed in 8.1.1, such conditions may include meeting another substance.

time both as forming structures and independently. Corresponding with the degrees of affinity we have causal laws of different strength. The present thesis provides an ontological explanation of the unity, and not an epistemic criterion with the purpose of distinguishing causation from coincidental pairings. As I said earlier, I do not think that philosophy can provide such a criterion, and, whatever their degree of reliability, the apparent regularities are the only clues we have.

In the *Inquiry*, after 'defining' a cause as '*an object followed by another, and where all the objects, similar to the first, are followed by an object similar to the second*', Hume adds '*Or, in other words, where, if the first object had not been, the second had never existed*' (1979, p. 87). The addition is both odd and enigmatic. It is odd, for it is rather arguable whether the expression 'in other words' is well-placed in that context. As Lewis emphasizes, the addition is not a restatement; instead, it puts forward a counterfactual analysis (1986c, p. 160). What Hume adds to his definition is not a thesis of regularity, and, moreover, for it to be true, it must apply to objective entities, i.e., to property-occurrences that belong to the world: as an assertion about the impressions of such entities it is not true. I will try to explain in the next section that, in contrast with the counterfactual, it is possible to interpret Hume's first definition as a statement concerning phenomena. What is enigmatic about the addition, on the other hand, is that Hume does not discuss it: neither does he back it by an explanation or argument, nor does he ever return to it. The counterfactual account has been developed, more recently, by David Lewis. Perceptively, Lewis remarks that we conceive of a cause as something that makes a difference in the world, such that in its absence, much of its effect, too, would be absent. Lewis' characterization applies to *particular* cases in which changes, that is property-occurrences ('events', in his own formulation), take place (p. 161). The gist of the account is admirably simple, and it can be stated briefly, even though somewhat sketchily.

A counterfactual is a proposition of the type that if C were true, then E would also be true. Such a proposition is true 'iff it takes less of a departure from actuality to make the consequent true along with the antecedent than it does to make the antecedent true without the consequent' (p. 164). In the terminology of possible worlds, a world in which both C and E are true resembles the actual world more

closely than one in which C is true without E being so. Here we say that E *depends counterfactually* upon C. Where C and E are propositions expressing property-occurrences, then the property-occurrence expressed in the consequent *depends causally* upon the one expressed in the antecedent. 'Whether *e* occurs or not depends upon whether *c* occurs or not. The dependence consists in the truth of two counterfactuals' (p. 166), expressing the relation according to whether C and E actually occur or not: if C were true, then E would also be true, and if C were not true, then E would not be true. 'So *e* depends causally on *c* iff ... *e* would have occurred if *c* had occurred', and if C and E are not actual events, 'if *c* had not been, *e* never had existed' (p. 167). 'The counterfactual means that at the closest worlds to [the actual] at which *c* does not occur, *e* does not occur either' (1986a, p. 78; brackets my interpolations.) If E depends upon C causally, then C is a cause of E.

I tend to agree that the counterfactual account captures cases of causation successfully, and that it at least partly explains the concept of a cause adequately. Indeed what we understand by a cause is something that makes a difference such that without it just that difference would not have occurred. What I do not find so satisfactory is the depth of the ontic explanation such an idea provides: the account above fails to answer the ontic 'why?'. This C is the cause of this E, iff in a closest world to this one E does not occur if C does not occur. But *why* should this be the case and not otherwise? Why is it that E would not have come about without the occurrence of C? A reply may be 'Because throughout the possibilities C's and E's are so distributed'. Nevertheless the answer would be more complete if it could say something about why the distribution is the way it is, and not different.

I submit that the suggestion 'Because C and E are the parts of a single temporally extending structural property' offers the fuller ontic explanation sought. The reason why throughout the possible worlds this C and this E are distributed in pairs, and not singly, is that the two form a single structural property with a unity. There would be no E without C just because E is a part of the same thing of which C is a part. In distant worlds, different cosmic conditions may perhaps set the two apart. But then in such worlds there is no causal relation between C and E in the sense we envisage such a thing. In this very distant sense of possibility, those property-occurrences which do form

a single structural property may not have come together, i.e., they may not have been related causally. I think that my account corresponds with that of Lewis, and provides it with a deeper ontic background. Now for Hume's other definition.

8.2 REGULARITIES, SINGULARISM AND PROCESSES

How did Hume see the relation between causes and regularities? Did he regard the constant union or conjunction of objective events as a necessary condition for their being causally connected? What may be called the standard interpretation of this philosopher is that he did so. But does Hume *have* to be read in this way? Might it not be that when in his definition of a cause he speaks of 'objects' being followed by others, what he has in mind are objects *as* contents (or impressions at the basis) of our ideas, and not the objects *of* such contents, and that he is offering there a definition of our *concept* of a cause? After all Hume sets his purpose as the understanding of our *ideas* of cause and effect, and of necessary connection. Why should his definition apply to objective causes and not merely to our ideas of them, if that is the purpose? Here is how Hume announces his target: 'To be fully acquainted, therefore, with the idea of power or necessary connection, let us examine its impression and, in order to find the impression with greater certainty, let us search for it in all the sources from which it may possibly be derived' (1979, p. 74). Why should even these sources be conceived extra-mentally?

Hume was looking for the difference between the phenomenologies of mere succession and the causal relation of property-occurrences, and, finding no other empirical character that might capture the difference, he propounded his celebrated theory that causation is a regular or constantly conjoined contiguous succession. Now the reinterpretation I am voicing maintains that philosophers opting for the standard view overlook the fact that the purpose of Hume's analysis is to account for our 'idea' or concept of a cause (and of a necessary connection).⁶ The reinterpretation will continue as follows: looking for the empirical basis of these ideas, Hume has described the psychological mechanism of how the understanding derives them

⁶ For Hume's reference to 'the idea of a cause' (and to that of necessary connection) as a target for inquiry see his 1969, pp. 123, 125, 205, 213, 215–20 and 1979, pp. 74–6, 78, 84–6, 89.

from impressions, and thus his analysis is in terms of phenomenal content. When he defines a cause as '*...an object precedent and contiguous to another, and where all the objects resembling the former are plac'd in a like relation of priority and contiguity to those objects, that resemble the latter*' (1969, p. 222), the objects he is speaking about are, therefore, empirical and not physical. If Hume is defining the content of our concept of a cause in terms of its phenomenal provenance, such a thing is not the same as defining a cause in the extra-mental sense. Representation and its object differ in intrinsic nature. Interpreting the definition as applying to objective causes would be cogent only if we read it in isolation from its context, for it is not valid to offer a psychological mechanism in support of a definition of causation in the objective, extra-psychological sense. The former cannot substantiate the latter, and a philosopher such as Hume would be perfectly aware of this point.

This reinterpretation of Hume is not at all committed to claiming that the great empiricist completely refrains from a discourse concerning 'external bodies' and objective regularities. It is obvious that more than occasionally Hume does refer to such entities.⁷ But, will declare the advocate of the reinterpretation, when Hume refers to external bodies he keenly avoids defining objective causation in terms of objective regularities, or suggesting that there exists an entailment between the two. Roughly, on Hume's account constant conjunctions constitute the background of our experience of regularities, and only the latter yields, in the form of an impression of reflection, i.e., 'a determination of the mind' to expect the occurrence of the effect wherever we observe the cause (1969, pp. 205–6; 215–16). The psychological process that underlies our *idea* of necessary connection and therefore that of a cause presents a necessary and sufficient condition. Hence the logical link between the *concept* of a cause and phenomenal (and ultimately physical) regularities. If this depiction is

⁷ See 1969, pp. 214–15. This is not to endorse the recent realistic reinterpretation of Hume according to which this philosopher believes in the objective existence of causal powers residing in objects. See G. Strawson, 1989, Craig, 1987 and Wright, 1983. For critical assessments see Blackburn, 1990 and Winkler, 1991. I think that we can attribute to Hume a certain 'causal objectivism', which in Costa's (1989, p. 174) words is the thesis that 'Causes are objective in the sense that causal relations would continue to hold among events in the world even if there were no minds to perceive them.' According to the interpretation of Hume I am describing here, in spite of such objectivism, Hume's definitions are not intended to apply to 'real' causes; they give us the content of our idea of a cause.

justified, it will be both unfair and invalid to conclude that Hume's account establishes a logical link between objective causes and objective regularities. From the fact that the existence of our concept of a cause necessitates (phenomenal or) objective constant conjunctions one cannot argue that objective causes, too, necessitate the same background. Hence it is illegitimate to use against Hume the logical possibility of unique objective causes with the purpose of refuting his theory.⁸

How reliable is the reinterpretation? It may be thought that although it is an internally consistent view, and somewhat makes sense in light of Hume's target, it cannot be true, nevertheless. There exists textual material seeming to deny it outright. To cite just one, an example is Hume's third 'rule by which to judge of causes and effects'. He says, 'There must be a constant union betwixt the cause and effect. 'Tis chiefly this quality, that constitutes the relation' (1969, p. 223). Even if this may sound like a statement about objective causes and effects, and their union, I am not convinced at all that it is not ambiguous. As in the definitions, in such contexts, too, it is perfectly consistent to read 'cause' (and 'effect' for that matter) in the sense of (the content of) our idea of cause, where the constant union of the impressions of two events is said to constitute the basis of this idea. Though I find this reinterpretation of Hume very plausible, it is not my purpose to try to establish it here. I have described it in order to indicate that the characterization of Hume's view as an approach committed to making uniquely occurring causation logically impossible stems from an assumption of objectivity (i.e., the standard view), and, if desired, such an assumption is avoidable without contradicting the purpose and spirit of Hume's philosophy. Otherwise, once Hume is understood in the standard way, some philosophers adopt the thesis that causation entails objective regularities as a position endorsed by Hume (see Davidson, 1980, pp. 149–62), while others reject it, believing that, thereby, they have rejected Hume's intended view (see Anscombe, 1975, p. 65; Ducasse, 1975, pp. 118 ff.; N. Cartwright, 1989, pp. 2, 91; and Tooley, 1987, p. 29). Thus the reinterpretation I have entertained above is meant to show that one can reconcile Humeanism with the logical possibility of unique objective causes.

⁸ Appeal to the logical possibility is the standard objection made by singularists.

If my explanation in terms of temporally extending structural properties is correct, uniquely occurring causation is a logical possibility. There is indeed nothing contradictory in a particular causal relation that remains unique or highly rare in the universe. Such an occurrence does not have to hinge on other similar instances in order to be consistent in itself. Moreover, there is no contradiction in a coincidence that recurs, appearing exactly like a so-called lawful uniformity.⁹ In addition to such a possibility there are also natural or man-made non-causal regularities: numerous examples such as those of night and day or traffic lights have generously served in the refutation of the thesis that having a background of a generalizable constant conjunction is a logical feature of causation.¹⁰ As I see it, however, in non-causal regularities the ontic basis is not a structural property. Alternating traffic lights are not the components of a single property; neither are day and night. That causes are complex properties explains why they exist in resemblance classes, but there may be resemblance classes owing to different circumstances, such as that of being man-made similarities. Usually, resemblance classes of pairing events that are not based on structural properties will be localized and limited in distribution through space and time. Epistemically, however, the detection of the difference may prove difficult, and sometimes impossible.

It is *logically* possible for there to be as many coincidental recurrences as the causal ones, and for these to spread as universally as the latter. If actualized, such a thing would not cancel out the ontic difference between causal and coincidental pairings, but would make the manifestation and practical significance of the two exactly alike. This logical possibility is remote, however; facts as they are in the universe allow me a consistent distinction between structural properties and coincidental property-occurrences. Of course, different structural properties can 'recur' more or less profusely: the frequency of some structural properties relative to the independent occurrence of the likes of the component properties is much less than that of the others. However low it may be, the frequency of indeterministic

⁹ Tooley's (1977 p. 686) example of 'Smith's Garden' simply exploits the logical possibility that there may be localized recurrences. We all know, though, the facts of our universe are different. Such a logical possibility presents no problem for any account that does not attempt to make regularities an analysans of the concept of law or causation.

¹⁰ For arguments criticizing the regularity view of laws see Armstrong, 1983, chapters 2 to 4.

causation should still be incomparably higher than that of coincidental co-occurrences.

8.2.1 Singularism and unique causation

Singularism is marked by its denial that particular causal relations entail a generality, and its advocates maintain that the non-existence of such an entailment amounts to a refutation of Hume's analysis of causation.¹¹ I have no objection to singularism if all that it amounts to is its proclaiming the logical possibility. But in such a case singularism is compatible with the reinterpretation of Hume which I have sketched in the preceding section. What would make singularism incompatible even with such a weaker account – and with my own position as well – would be its regarding the logical possibility of unique causes as a physical possibility as well.¹²

'Unique causation' is a somewhat excessive appellation, but it serves well as a label. By that I understand not only causal relations that occur only once, but also those that occur rarely, infrequently enough to exclude any generalizability. I shall maintain that if there existed actual unique causes, that is, causal relations that occur much less often than the mutually independent occurrence of the likes of the cause and the effect, such cases would either be indiscernible from, or imply, miracles. At first sight such a charge may seem to overlook the fact that although both unique causes and miracles consist of the coupling of properties the likes of which almost never pair up, the latter differ from the former in that they infringe the so-called laws of nature, not to mention their having a divine source.¹³ In unique causation, at least in what the singularist understands by this, there is no violation of the laws of nature; such an occurrence simply falls outside such laws without violating them. It may be responded that even though there may occur unique

¹¹ As far as this thesis is concerned singularists are not, as I see it, in discordance with Hume, though they unfairly make it a claim against him. See Ducasse, 1975, pp. 118–19; N. Cartwright, 1989, p. 2.

¹² For the explicit defence of such a position see Irzik, 1990, pp. 537–43.

¹³ The concept of a miracle involves the infringement of a regularity of nature: 'A miracle is a violation of the laws of nature ... Nothing is esteemed a miracle if it ever happen in the common course of nature ... There must ... be a uniform experience against every miraculous event, otherwise the event would not merit that appellation.' Hume, 1979, pp. 122–3.

causal relations that do not infringe the laws, it is debatable whether these will exist without consequences that do. Bending bars by mental concentration would be an instance of unique causation which, unlike a metal bar shrinking upon being heated, does not directly infringe a law. By consequence, however, it will infringe such laws; physical work will have been done without expending physical energy.

What is it for unique causation, said to be consistent with the laws of nature without being subsumable under any of them, to be physically possible? Are we to understand by this ordinary empirical possibility? No doubt, empirical possibility does not mean being empirically available. It doesn't follow that something that has become actual, and thus observable, must be the fulfillment of an empirical possibility. That we can imagine the actualization of miracles shows this clearly. An empirical possibility cannot be totally dissociated from natural regularities. However recondite, what is empirically possible is something that comes into being in conformity with the laws of nature, in the sense of being explainable in terms of them. Jumping two miles up in the air, giving birth to twenty-four pups at once, or healing a terminally ill person by the touch of the palm would be empirical possibilities if and only if they could be accounted for by means of laws. Similarly, there could be a golden mountain of one thousand cubic feet only if the existing laws of nature permit the generation and accumulation of such an amount of gold in one location. Conceivable salient provenance that does not violate or follow the laws of nature is not an empirical possibility. In order to make room for unique causation, therefore, 'physical possibility' requires being conceived in a sense weaker and broader than plain empirical possibility, without however expanding as far as pure logical possibility.

If only miracles and not unique causal relations violate laws, and there is no other 'natural' difference between the two, then if one is a physical possibility, the other is too. If unique causal relations are possible, in the same sense of possibility unique causal relations that violate laws are also possible. The gist of the matter is that if there is a physically possible sense in which any two property-occurrences the likes of which do not pair up can combine in a causal relation, there is no reason why both of these occurrences should fall outside existing laws instead of one of them only, the other remaining subsumable

under an event-type that is part of an existing causal law. But if in a causal relation only one of the relata falls under a term of a lawful generality, then this relation infringes the generality. Either singularism avoids this by appealing to a law that blocks it, and thus defeats its own purpose, or it is committed to making room for miracles within the same realm of possibility as that of unique causation, and neither prong is acceptable. If we want to understand causation as property-occurrences related in a more substantial way than a mere spatiotemporal configuration, and want this to match the actual world, retreat to unique causes has to be avoided.

8.2.2 *Singularism and 'causal processes'*

Does appeal to Wesley Salmon's 'processes' offer a plausible non-Humean basis for singularism? Salmon's account is not, of course, an explicit defence of singularism, but, as he acknowledges, it accommodates this doctrine comfortably.¹⁴ According to Salmon, a distinguishing mark of causal relations ('interactions' in his terms) is that they are linked by 'causal processes'. An example for the latter is a four-dimensionally conceived object, i.e., a substance extending through time, which acquires, bears and retains properties (marks). A process has the ability 'to transmit a modification in its structure – a mark – resulting from an interaction' (1984, p. 153). 'Causal processes are the means by which causal influence is propagated, and changes in processes are produced by causal interactions ... When two processes intersect, and they undergo correlated modifications that persist after the intersection, I shall say that the intersection constitutes a *causal interaction*' (p. 170). Salmon distinguishes between propagation and production as different causal concepts. In his terminology, propagation is captured by the notion of a 'causal process', while production is what he calls a 'causal interaction'. He then observes that the two concepts are not mutually reducible, and that production has been largely abandoned by science (pp. 137–9). Nevertheless, what corresponds in this ramification with the classical concept of causation, which Hume, Ducasse, and other philosophers wanted to explain, is just the latter notion. 'Production' is a relation between two changes (between two succeeding temporally extended properties or 'marks'),

¹⁴ 1984, p. 182. Salmon is meanwhile careful to note that 'causal processes and causal interactions seem to be governed by basic laws of nature' (p. 179).

and Salmon promises an elucidation of it through his account: 'I think we can make sense of a cause-effect relation only if we can provide a *causal connection* between the cause and the effect' (p. 155). The ramification remains blind, however, to the distinction I have drawn in 8.1 between property-occurrences that pair up in the same substance and those that do in different ones. Production involves changes, and hence the appropriate pairings, but occurs in more than one substance. Propagation, on the other hand, involves one substance, but then excludes change.

First, I will draw attention to what seems to be some incoherence: Salmon declares that 'The propagation of causal influence by means of causal processes *constitutes* ... the mysterious connection between cause and effect which Hume sought ... Causal processes constitute precisely the causal connections that Hume sought, but was unable to find' (pp. 155, 147). In fact, Salmon makes an effort to show that 'causal processes in many instances constitute the causal connections between cause and effect ... The typical cause-effect situation ... I characterize ... in terms of a causal process joining two distinct interactions' (p. 182). The situation then appears to be that he is either holding mistakenly (and inconsistently with his own distinction) that his account of propagation will also do as an account of production, or he is committing the error of supposing that Hume too was after an explanation of propagation rather than production. If the latter disjunct is true, then it becomes a total mystery why he criticises Hume for having conceived of causation narrowly, in terms of two events bearing a cause-effect relation to one another.

Secondly, suppose one attempts to explain the connection between the cause and the effect by the concept of a causal process. Such a scheme cannot offer a satisfactory account of causal interaction since the latter takes place between two different objects, where one produces a change in another, and *ex hypothesi* there can be no causal process linking two different objects. Using Salmon's terminology, a causal interaction involves two distinct causal processes and, given the modifications occurring in these two, nothing contained in the account connects them and explains their relation. What is it for a billiard ball's impact to cause a change in another's momentum? What is it for one ball's motion to cause the motion of another? It was just this that Hume sought to explain, and not how substances preserve motion or any mark they acquire. Rather than explain productive

causal connection, Salmon's scheme simply assumes it.¹⁵ We have to infer that his theory does not further our understanding of causation in the direction that this concept has been an object of interest for many philosophers. Salmon takes a causal chain and offers us the rings of the chain as the links in answer to what links the rings!

What connects modifications occurring at intersections of processes is, I submit, the unity of structural properties the elements of which are marks propagated by these processes. Structural properties also explain the acquisition of new marks without relevant intersections, something left totally unaccounted for by Salmon's theory. Clearly though, the wax heats up because it is placed near the blazing coal, and its turning black or melting down is not because of the coal directly but rather because it is hot. Indeed, Salmon is right when he says that causation should not be seen as a link that connects distinct events.

I conclude by pointing out that subscribing to a particularistic ontology does not commit an account of causation to singularism, if such a thing is understood as a radical alternative to what Hume has in fact set forth. Explaining the nature of causation in terms of structural properties, on the other hand, offers a very plausible account of the regularities of the physical world. It lends, moreover, Hume's phenomenal particularism an objective physical background, providing a basis for the claim that a regularity distinguishes causation without being logically linked with it.

This concludes my discussion of the ontological aspect of causation. I have argued that, in a way akin to essences and objects, the so-called 'cement of the universe', too, derives from principles governing the existence of properties in space and time. One of my main contentions has been that all three categories of object, essence and causal relation are different manifestations of basically the same fundamental feature of existence, which by physical necessity ensures that properties exist in bundles continuously, and sometimes also

¹⁵ Salmon, 1984, p. 155, admits that his account hinges on this point crucially: 'this account of transmission of marks and propagation of causal influence used the unanalysed notion of a causal interaction that produces a mark. Unless a satisfactory account of causal interaction and mark production can be provided, our theory of causality will contain a severe lacuna.' But the account promised is never supplied. Instead, wherever interaction needs characterization Salmon takes refuge in the phrase 'producing a mark'. See pp. 170–1 and 182. One wonders what 'producing a mark' means over and above the good old Humean expression 'causing something'.

form patterns that extend spatially or temporally, but never in isolation. The world's manifold displays its richness in two irreducibly different ways. There is plurality as separateness in bits and pieces, and also as a diversity in aspects. The world is, in other words, a profusion both of concrete individual things and of properties, and no relation of entailment exists between the two: neither does a difference in properties require the existence of separate objects nor do distinct objects necessitate a 'diversity' in qualities: objects can be exactly similar. A chief purpose of the present study has been, therefore, to account for how the universe does not turn out to be a world of free-floating independent qualities. I have depicted the principles according to which, in various orderly ways, the analytic units of existence form the physical units. I have maintained that all manifest physical existence, including facts concerning the change, continued sameness and common features of objects, can be explained within the framework of the distribution of particular properties through space and time. With the very same properties a different distribution would have yielded a very different universe. The principles according to which the actual distribution is the way it is make this an orderly place rather than chaos.

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