THE RELATION BETWEEN SOCIAL AND INDIVIDUALISTIC PHENOMENA:

REDUCTION, DETERMINATION OR SUPERVENIENCE

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ABSTRACT

This thesis aims to analyse in detail the metaphysical relation between social and individualistic phenomena. Social phenomena are taken to include social entities such as institutions or social groups, the social properties of these social entities and also the social properties of individuals. Individualistic phenomena include physical, physiological and mental or psychological properties of individuals.

Chapter 1 considers whether social phenomena could be reduced to individualistic phenomena. A discussion of reduction, in so far as it would be applicable to the metaphysical relation between social and individualistic phenomena, reveals that this relation cannot be the one which holds between social and individualistic phenomena.

In Chapter 2 a weaker relation than reduction is considered, *viz.* the relation of determination. This is found to hold promise, especially in so far as it captures the relation between mental and physical phenomena. Reasons are considered which make it likely that this relation could be applied to social and individualistic phenomena.

Chapter 3 considers a detailed formulation of one specific version of determination: supervenience. Again, the relation as it

is applied to mental and physical phenomena is discussed, some objections are raised to it and modifications suggested.

This relation is applied to the social-individualistic case in Chapter 4. Examples of its application are analysed and some doubts are raised as to the scope of its application. In this version it applies only to the social and individualistic properties of people.

In the final chapter, the relation of supervenience is generalized in order that its application to the relation between social and individual phenomena be extended to cover the relation between social entities and their properties as well as the social properties of individuals. It is shown that all these aspects of the social can be taken to supervene on individualistic phenomena.

In this respect, supervenience is shown to be at least a potential candidate for the relation holding between social and individualistic phenomena. Some caveats are raised in the conclusion.

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"Supervenience is that magical solution which allows us to commit a variety of linguistic sins without ontological guilt."

[Macdonald 1986: Note 1]

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INTRODUCTION

This thesis concerns the relation between social and individualistic phenomena. As the wording of the title might suggest, the relation being considered is broader than the relation which might hold between social entities and individuals. In addition to social entities, the level of social phenomena may include social properties of these entities as well as social properties of individuals. The individualistic level will include people and their non-social properties, which may be psychological, physiological or physical, as well as the non-social properties of any other non-social entities, such as buildings, pieces of metal *etc.* which may be required.

Recent developments in neurophysiology have fanned the debate on the mind-brain relationship which has characterised the philosophy of mind. More specifically, these developments have tended to lend support to monist or materialist positions. While the type-type identity theories, popular in the 1960's, have not generally been resurrected, many varieties of token-token identity theories have been spawned.

In a number of respects, the debate on the relation between the social and the individualistic has, by contrast, been more restrained in recent years. Earlier, philosophers such as Popper

had argued with a moral fervour in favour of the reduction of the social to the individualistic, in order to be spared the horrors of uncontrollable social forces. Subsequently, among the followers of Popper (perhaps best typified by Watkins) and others, these claims were replaced by more dispassionate attempts to argue the case in favour of reduction. A few papers raising objections to their views came to acquire the status of classics [*e.g.* Mandelbaum 1955]. The issue, however, was never satisfactorily resolved, having reached something of a stalemate in the 1970's.

Subsequently in the mid-1980's, two books emerged which re-engaged with these issues and which made full-bodied attempts to renounce the claims for reduction and to argue against them. These books are [James 1984] and [Ruben 1985]. Both books and their respective authors have exerted an enormous influence on my work. However, neither of the books is discussed in any detail in this thesis, although Ruben's is referred to on a number of occasions. This is not accidental. Rather it is for the following reason: in this thesis, I shall be looking, instead of at James' and Ruben's arguments, at the arguments which have penetrated the philosophy of mind. It will be the latter that I shall be attempting to apply to the relation between social and individualistic phenomena.

This is the respect in which this thesis aims to offer something original. But it is really only possible because James and Ruben have cleared the ground and opened up the debate over the social-individualistic relation by making two different, but equally

serious, cases against the reduction of the social to the individualistic. Given confidence by these works, I have decided not to reconsider the standard arguments for holism and individualism.

Reduction, however, is an issue which refuses to lie quietly, and it is perhaps unwisely that I have elected to begin with a partial analysis of this relation and how it might be applied to the social-individualistic relation or, to pre-empt my findings, how the application is doomed to failure. Type-type identity theories appeared to embody many of the claims of reduction and, unsurprisingly the latter, like the identity theories, is open to serious objections.

The discussion then moves on to consider some versions of the *prima facie* more plausible token-token identity theories. The application of token-token identity theories to the mind-brain debate owes much to Davidson's seminal formulation of anomalous monism [Davidson:1970]. Many versions have developed in the light of this, often motivated by developments in neurophysiology. In their formulation, they would usually expect to be able to accommodate some of neurophysiology's findings. One such relation is supervenience, so once the token-token theories have been considered generally, this particular one is considered in detail. I believe I am unique in attempting to apply a detailed formulation of the relation of supervenience to the relation between social and individualistic phenomena. Admittedly, I am not the first to defend

the claim that the social supervenes on the individualistic, but how this claim is to be elaborated, and what the details of such a relation would be, have not, to my knowledge, been presented in depth. It is this omission which this thesis intends to make good.

It should also be mentioned that the whole thesis deals primarily with metaphysical considerations. It is concerned to analyse potential candidates for the particular relationship between social and individualistic phenomena. Epistemological and methodological questions about this relation are not raised. The relation of supervenience is not proposed as one which will help to explain social phenomena or promote our understanding of them. Nor is it intended that it should tell us anything about how the level of social phenomena should be studied. In this respect, supervenience, even if successful in characterising the social-individualistic relation, would not promote the unity of science insofar as it could not be used in support of an argument for the unity of method. At most, it will tell us something about the order of priority of different levels of phenomena. The extent to which it is capable of doing this will emerge in what follows.

CHAPTER 1

REDUCTION

The purpose of this chapter is to consider the nature of the relation that holds between two theories when one theory is said to be reducible to another theory. Throughout, the reducing theory will be referred to as T1 and the reduced theory as T2. Much philosophical literature has been written on the reduction relation, analysing it from different perspectives, in differing degrees of detail and with different ultimate ends in mind. The discussion of the reduction relation here is intended to be sufficiently general and detailed to be applicable to any two theories, T1 and T2, in order to evaluate whether or not the claim that T2 could be reduced to T1 is actually justified.[1] Ultimately, our concern will be to see whether or not social theories are reducible to theories of individuals. However, such considerations presuppose that formal criteria for the reduction-relation have been specified and defended. So it is with the latter that the chapter begins.

The motivation for reduction provides a clue to the criteria to be satisfied if a relation of reduction is to obtain. The reasons for which reduction is proposed should indicate *what* the relation is intended to capture. Once this is known, it will be easier to

specify *how* this is to be captured *i.e.* what criteria are to be satisfied.

Most generally, reduction is often taken to be one of the means to the unity of science. Unity is achieved via reduction in two distinct, though complementary, ways. On the one hand, there is explanatory unification, and on the other, ontological unification. So reduction is motivated by the desire to have two distinct theories subsumed under one common set of explanatory principles or explanatory laws, and the desire to link the entities postulated in T2 with the entities of T1, thereby economising on ontological commitment. Clifford Hooker has referred to 'metaphysical coherence' as the motivation for reduction. This is apt since it alludes to both types of unification: the explanatory and the ontological. [Hooker 1981:212]

If this is what the reduction-relation is to encapsulate, the task to be confronted is the complex one of specifying just how reduction is to capture such ontological and explanatory unification. Formal criteria for reduction have been set out by Ernest Nagel in what has probably come to be regarded as the standard account (notwithstanding substantial criticism) of reduction. [Nagel 1961: Ch 11] One reason for beginning with Nagel's account of reduction is that it hinges on two formal criteria which seem to correspond generally to the two motivational criteria mentioned above. Nagel's criteria are the *Condition of Connectability* (CC) and the *Condition of Derivability* (CD). What

these conditions entail, and how they may be construed as the means to promote ontological and explanatory unity, will now be considered.

CC requires that:

> "Assumptions of some kind must be introduced which postulate suitable relations between whatever is signified by 'A' [some term featured in the laws of T2 which does not feature in the theoretical assumptions of T1] and traits represented by theoretical terms already present in the primary science [T1]." [Nagel 1961:353-354]

CC is thus a way of linking the terms of T2 and whatever entities they signify with the terms and entities of T1. Furthermore, it is specifically restricted to the theoretical terms and entities. Although the general idea behind CC is that of linking the terms of T2 with those of T1, it should not be construed as the predominantly linguistic exercise of incorporating the vocabulary of T2 into the vocabulary of T1. There is much more to the reduction-relation than connections between terms and vocabulary. What is important are the entities signified by the terms. These entities will be both things or objects and their properties or attributes.

If the discussion focusses on these entities then it is possible to see how CC may be adapted to do the work of ontological unification. If the entities in T2 can be shown to be linked to the entities of T1 - where these connections can be established as identities - then it follows that the two theories are actually referring to the same entities *i.e.* what was formerly thought to be two sets of entities will be reduced - via connectability of objects - to only one set. This would constitute a significant ontological

economy, not necessarily in the sense that the objects of T2 are denied existence after the reduction, but rather in the sense that the objects of T2 are shown to be the same objects as those referred to by T1.

There is a difficulty for Nagel's characterisation in so far as it presupposes, in true empiricist fashion, that theoretical terms can be distinguished and separated from observational terms. Nagel is then exclusively concerned with theoretical terms. Not only does the presupposition of such a distinction seem unnecessary; in the light of much recent literature, it also seems unwise.[2]

However, I would suggest that the theory-observation distinction need not be made to do any work in CC. Indeed it need not even be invoked. Entities may be referred to by terms without unhelpful attempts to classify the terms as theoretical or observational. In considering CC for reduction, it will be necessary to refer to the objects of T2 and T1 in the vocabularies of their respective theories. The point is simply that it will not be necessary to demarcate some terms as theoretical and others as observational, in order to consider the ontological links between the objects of the theories.

There is a great deal more to be said on just how such connections are to be established, but before getting involved in the details of this - a discussion of which will constitute most of this chapter - it will be worth making a few brief comments on the

other formal criterion for reduction that Nagel invokes *viz.* the Condition of Derivability (CD). This condition relates to the other source of motivation for reduction, explanatory economy. Nagel's CD asserts that:

> "all the laws of the secondary science [T2]...must be logically derivable from the theoretical premises and their associated coordinating definitions in the primary discipline [T1]." [Ibid:354]

Given the reluctance to rely upon a theory-observation distinction, the restriction in Nagel's CD to the theoretical premises of T1 again seems unnecessary. This condition may simply be taken to require that the laws of T2 should be logically derivable from the laws of T1, augmented by the correlations established by CC.

CD can be satisfied independently of the particular way in which CC is satisfied. The relations postulated by CC between the entities of T2 and T1 could be weaker than identities. This may be enough to satisfy CC without adversely affecting the satisfaction of CD. Our concern so far has been that only the establishment of identities between entities will allow CC to promote ontological unity.

There is a connection between CD and explanation which can be fairly readily specified. Under the standard deductive-nomological model of explanation, an explanation is a deductive argument in which a statement of the event to be explained is logically deduced from premises consisting of general laws and statements of initial conditions. If all the laws of T2 can be deduced from the laws of

T1, then it follows that statements about the events explained by T2 can be deduced from the general laws of T1 and statements of initial conditions. Moreover, given the deductive-nomological model, the laws of T2 will then be explained by the laws of T1. This is required by CD. The condition would not be satisfied if the events explained by T2 were explainable by T1, but the laws of T2 were not. The explanatory principles of T1 must thus be able to explain the phenomena of T2 as well as the phenomena of T1. It is in this respect that CD promotes explanatory unification.

Such unification is interesting, not least because it brings together the three notions of reduction, deduction and explanation. Thus far it has been suggested that explanation involves the deduction of the explanandum from a suitable explanans, and that reduction involves the fulfillment of CD which entails the explanation of the laws of T2 by those of T1 and the deduction of events explained by T2 from the laws of T1. In this way, explanatory unification is achieved. However, it can be mentioned immediately that not all deductions qualify as explanations and that not all instances of explanatory unification qualify as reduction *e.g.* if the laws of T2 and T1 were both explained by the laws of another theory, T3. In this case, T2 would not be reduced to T1; although a case could be made for the reduction of both T2 and T1 to T3.

There is one crucial problem with what has been mentioned so far. This is that the link between CD and explanatory unification -

and thus between reduction and explanation - depends on the characterisation of explanation given by the deductive-nomological model. Despite being the standard model, deductive-nomological explanation has come under severe criticism and its continued use would need considerable defence. Without the deductive-nomological model, it is likely that the close link between deduction and explanation would be severed and with it, the link between explanation and reduction. It is not intended to defend the deductive-nomological model of explanation here. Nor will much more time be devoted to a discussion of CD.

If the spirit of Nagel's analysis is to be preserved, then CC will have to be examined in detail before CD can be assessed, as the latter makes use of CC to provide connections between the events covered by T2 and T1. These connections are required before the possibility of deducing T2 from T1 can be considered.

The discussion of CC alone will provide us with grounds for rejecting the possibility of ever reducing social theories to theories of individuals. In this respect, this chapter makes no claim to offer a comprehensive analysis of reduction. That would take a braver and more competent philosopher. For the purposes of this thesis on the relation between social and individualistic phenomena, only those aspects of the reduction relation which have direct bearing on the topic will be considered. This will limit the discussion almost exclusively to CC.

Moreover, this is in keeping with my expressed interest in the metaphysical relation between the social and the individual, rather than the epistemological or explanatory relation. This should in no way be taken to reflect upon the value of the latter as a topic worthy of research.

The need for connectability in reduction is perhaps highlighted by the distinction which can be drawn between *homogeneous* and *heterogeneous* reductions. A homogeneous reduction is one where all the terms of T2 occur in T1, while a heterogeneous reduction is one where they do not. Heterogeneous reductions will be more difficult to characterise than homogeneous ones, as there will be no immediately available links between the terms in which T2 and T1 are couched. It will not be possible to deduce the laws of T2 from those of T1 if the laws of T2 use terms which do not appear in the laws of T1. It will thus be impossible to derive T2 as a logical consequence of T1 since, in a deductively valid argument, the conclusion cannot contain terms not occurring in the premises unless (in their occurrence in the conclusion) they could be replaced by any other term, without affecting the validity of the argument. So in order to deduce the laws of T2 from those of T1 it will be necessary to introduce connections between T2 and T1.

It is also a reasonable projection that heterogeneous reductions are more likely to find interesting practical application. While it is conceivable that there may be two distinct theories with the same vocabulary, it is unlikely that an interesting relation of reduction

could be established between them. Homogeneous reductions may be regarded as a special case of all reductions: if CC is a criterion of reduction, then homogeneous reductions are those instances of reduction where CC is trivially satisfied since all the terms of T2 are linked with the same terms in T1. Consequently the objects referred to by those terms in the different theories are identical. The following discussion of the connections to be established between theories for reduction will focus on heterogeneous reductions.

There are different possible cross-classifications of the sorts of correlations that might fulfil CC. Nagel considers three kinds of correlations:

1) logical connections via the meanings of terms,

2) conventions or definitions, and

3) factual or material connections. [Ibid.:354]

Given that our concerns are not primarily linguistic, the first two kinds of correlations will not be considered. In the following analysis, factual or material connections established in reduction will be considered. It will be shown that these must be either relations of identity holding beween the entities referred to in T2 and T1, or nomological coextensions between the attributes or properties of those entities.

There is a third kind of connection, comparable to factual and material connections, *viz* accidental coextension. However, when one theory is reducible to another, something stronger than accidental

connections between the two theories must be established. Accidental connecting relations between the entities of theories would never be able to support claims of ontological unity. Hence for the purposes of an analysis of reduction, accidental correlations or connections will be ignored.

Focus will thus be on identities and nomological coextensions. Yet identities and nomological coextensions between attributes do not always appear to be necessary for the reduction of one theory to another. If it is accepted that the attribute predicates of T2 will often be of greater generality than those of T1, then it follows that the connections established between them may link one T2-attribute predicate with a disjunction of several T1-attribute predicates. All that CC would appear to require in such cases is that the T1-attribute predicate be a nomologically sufficient condition for the T2-attribute predicate. It need not be a nomologically necessary condition as well. Indeed often it will not be, for instance where a group of T1-attribute predicates is connected to a unique T2-attribute predicate *i.e.* where the T2-predicate may be variably realised by different T1-predicates. Moreover, it is important to emphasise that a necessary connection, where a unique T1-attribute predicate is a nomologically necessary condition for several T2-attribute predicates, (the converse of the nomologically sufficient conditions described above) would *not* ensure reduction. Such connections do not allow the unambiguous derivation of the laws of T2 from those of T1.[3]

In considering the connections between theories in reduction it will be necessary to consider them holding between things and between the attributes or properties of these things. The possibilities to be considered for the satisfaction of CC will thus be thing-identities as well as attribute/property-identities, coextensions (from now on it will be assumed that the coextensions referred to are nomological) and sufficient conditionals. Much headway in analysing these connections has been made by Robert Causey [Causey 1977] and at this point it will be most helpful to consider some of his work.[4]

Causey's analysis deals specifically with a special class of reduction *viz.* micro-reduction, in which all the objects in the domain of T1 are shown to be proper spatial parts of objects in the domain of T2. The ontology of T2 is thus shown to be included in the ontology of T1. Causey classifies objects according to their kind. The defining characteristics of kinds of objects will have to be spelled out, but first it should be mentioned that the objects of a theory are classed as either basic or compound. (There need not necessarily be compound elements in every theory.) A basic element in the domain of a theory is an element of that domain which is not, from the point of view of that theory, a structured whole whose parts are elements in the domain. It may however be a structured whole from the point of view of some more basic theory. By contrast, a compound element is a structured whole of at least two parts, where these parts are basic elements in the domain. [Ibid.:55]

The structure of compound elements is important for Causey's analysis of reduction and is described in terms of basic thing-predicates and attribute-predicates as follows: certain types of basic elements are classified into compound elements in accordance with a structural description *i.e.* basic elements combine in a certain structure to form a compound. Two compound elements are thus of the same kind iff they have the same structure.

This seems intuitively clear. Unfortunately though, Causey's characterisation of basic elements is rather less clear:

> "Any two basic elements are of the same kind iff they have exactly the same classifying attributes, both primitive and defined." [Ibid.:62]

Classifying attributes are attributes, predicable of objects, which refer to features salient for the classification of objects into structured, compound kinds. For example, the atomic structure of hydrogen would be a classificatory attribute, salient for determining how that element combines to form the compound, water. Classifying attributes characterise those relations according to which basic elements are combined into compound elements. So it seems that kinds of basic elements are defined in terms of the compound elements they may form. This characterisation has the implausible consequence that any basic elements classified as compound elements in accordance with the same structural description, would have to be identified as basic elements of the same kind *i.e.* it would not be possible to have compounds of the same kind composed of basic elements of different kinds. This will most likely not pose a problem for chemical compounds such as water,

but it could be disastrous for certain social entities such as money which might be variably realised under different circumstances by very different kinds of entities.

It is a counter-intuitive aspect of Causey's analysis that basic elements are characterised in terms of compound ones rather than the other way round. However, it should be remembered that the compound elements referred to so far are in the same theory as the basic elements, so Causey's analysis of kinds of elements has not prejudged the reduction issue by defining the entities of T2 in terms of T1. T2 and T1 are most likely to have both basic and compound elements in each of their domains.

In a heterogeneous reduction, connecting sentences between thing-predicates will not be analytic. For instance, to use Causey's example, if the empirically smallest sample of water is correlated with an H_2O molecule, the connection between 'empirically smallest sample of water' and 'H_2O molecule' will not be analytic, as the two expressions do not mean the same thing. If they did mean the same thing, and if all thing-predicates of T2 could be correlated with thing-predicates of T1 with the same meanings respectively, then the reduction would be homogeneous, not heterogeneous. Rather, the connection here is synthetic. It remains to consider if it may be a synthetic identity *i.e.* whether or not it asserts that the expressions refer to exactly the same thing, albeit by different names.

Assume the connection is a synthetic coextension of the form $T_2x \equiv T_1x$, where T_2 is the thing-predicate 'empirically smallest sample of water' and T_1 is the thing-predicate 'H_2O molecule'. It is necessary for reduction that the coextension be nomological. Such a nomological coextension could be a law-sentence. But if it were, it would encapsulate a causal correlation (or some other kind of correlation if you do not believe that all laws are causal correlations) which would itself require explanation. Causey claims that in the example the connection between 'empirically smallest sample of water' and 'H_2O molecule' is not a law. This is because it does not make sense to postulate a causal relation (which should be causally explained) between the two thing-predicates. A demand for a causal explanation as to why an H_2O molecule is correlated with the empirically smallest sample of water would be absurd, since an H_2O molecule simply *is* the empirically smallest sample of water.

This is a claim for the identity of thing-predicates in order to satisfy CC for the entities of two distinct theories. Causey substantiates this identity claim with an additional argument based on the logical structure of thing-predicates. This argument hinges on the fact that thing-predicates function as names for basic entities.

> "Thing-predicates involved [such as 'empirically smallest sample of water'] function simply as *names* for homogeneous natural equivalence classes (kinds) of elements. As names, they do not refer to any attributes these elements might have as a matter of empirical fact. This is even true of compound thing-predicates defined with the help of structural descriptions. The structural description of a compound element is used as part of the definition of this element. Therefore, it is analytically true that a certain type of compound element has the structure it has, and hence we cannot causally explain why it has that structure.
>
> Now, relative to a given set of classifying attributes, the various *kinds* of elements are the various homogeneous

> natural equivalence classes, and the latter are denoted by the thing-predicates of the theory. Therefore, if two such thing-predicates, even from different theories, are coextensional...there is no way such a co-extensionality could be causally explained. This is because the coextensionality merely asserts that the two thing-predicates name the same thing *i.e.* a certain homogeneous natural equivalence class. Therefore...[the coextension of thing-predicates such as 'empirically smallest sample of water' and 'H_2O molecule'] should not be interpreted as a causal law-sentence, but rather as a sort of identity, namely, a thing-identity, which asserts the identity of two kinds of things." [Ibid.:81]

Causey's argument seems to run as follows:

A. (i) Thing-predicates function as names

(ii) Names do not refer to the attributes elements have as a matter of empirical fact

∴ (iii) Thing predicates do not refer to the attributes elements have as a matter of empirical fact.

B. (i) Any predicate that does not so refer cannot be causally explained

∴ (ii) Given A, thing-predicates cannot be causally explained.

C. (i) Suppose two thing-predicates are coextensional

(ii) This means they function as names for the same equivalence class

∴ (iii) Given A and B, it follows that the coextensionality cannot be causally explained.

There is a problem with this argument. From the assertion that, if a predicate does not refer to the attributes which an element has as a matter of empirical fact, then it cannot be causally explained,

it does not automatically follow that if two predicates (which do not refer to the attributes which elements have as a matter of empirical fact) are coextensional, the coextensionality cannot be causally explained. However, if it is accepted that thing-predicates, functioning as names, are part of the *definition* of the objects of which they are predicates, then it *does* follow that two coextensional thing-predicates define the same entity. If this is the case, then their coextensionality must be underpinned by an identity.

The coextension of thing-predicates, thus interpreted, does ensure their identity. What though of nomologically sufficient conditions between the entities of the theories for reduction? As discussed above, such connections would appear to satisfy CC as well. The same arguments that Causey advanced to show that the coextensions between thing-predicates must in fact be identities, can be used here, provided that one assumption is granted. This is the assumption that it is possible to form the disjunction of all such nomologically sufficient conditions for any T2 entity. Given that the aim of reduction is taken to be ontological economy, this assumption should be acceptable. There could be no serious claim for ontological economy if entities of T2 were agreed to be correlated with disjunctions of entities from T1, but which entities the disjuncts referred to could neither be specified nor determined.

This may seem to be a rather harsh way of dealing with reduction. It is, however, not the last word on the possibility

that the connections between theories may be nomologically sufficient conditions. A discussion of these will form part of later chapters where weaker relations between theories than reduction come under scrutiny. For the purposes of this chapter, it has been decided to construe reduction as being motivated by a desire for ontological and explanatory economy. CC is thus construed as specifically advancing the cause of ontological economy. Bearing this in mind, it seems reasonable to require, in order to reduce T2 to T1, that the thing-predicates of T2 be identified with the thing-predicates of T1. Consequently, CC will only be satisfied if identities can be established between the theoretical objects of the reduced theory and some objects of the reducing theory.

This is only part of CC. In addition to connections between the entities of the reduced and reducing theories, CC also involves connections between the attributes or properties of the objects. These will now be considered.

Attribute-predicates, unlike thing-predicates, do not function as names for the objects of which they are predicates. Moreover, they *do* often refer to attributes those objects have as a matter of empirical fact. So the arguments presented above for the identity of coextensional thing-predicates cannot be applied to attribute-predicates. New arguments will have to be considered.

As in the case of thing-predicate connecting sentences in heterogeneous reductions, attribute-predicate connecting sentences are not analytic. The question to be considered is whether the connections are synthetic coextensions or synthetic identities. Traditionally, it has been argued that attributes cannot be identical unless the statement asserting the coextension of the attribute-predicates is analytically true. Yet, as has been mentioned, in a heterogeneous reduction, the sentences connecting the attribute-predicates of T2 with some from T1 will not be analytic. Causey, however, claims to have independent arguments for their identity.

Reduction aims to explain the phenomena of T2 in terms of T1 and to do this it requires connecting sentences between the attribute-predicates of T2 and T1. But if these connections themselves require explanation - and the correlations between attribute-predicates do seem to call for explanation - the reduction will never be achieved. The connections between attributes must thus be identities, Causey argues, which are non-causal and require no explanation. Indeed, he claims that if we look at the reductive connection between such attribute-predicates as the pressure of a gas and the statistically averaged change of momentum of gas molecules per unit area and time, we will find that, although the connection is supported by empirical evidence, it is nowhere explained. So the connection must be an attribute-identity after all. Consequently he asserts that the identity of attribute-predicates is a formal requirement for reduction.

That there are difficulties obstructing Causey's arguments for attribute identity should be apparent. Clearly the desire for a connection to be an identity is insufficient to warrant the assertion that the connection is an identity. The mere facts that the connecting sentences in reduction must not require additional explanation, that non-causal connections require no additional explanation and that identities are non-causal are not sufficient grounds for asserting in this case that the connections are identities. In the case of thing-predicates, the additional claim that they function as names *did* justify the claim for their identity. Attribute-predicates do not function similarly as names. An independent argument in support of the claim that the connections between attributes are identities would be required. Causey fails to provide this.

There is another problem with Causey's account. This is that it offers no criteria for distinguishing identities from mere coextensions. The coextension of two attributes appears to be all that can be established empirically. There appears to be no factual difference between attribute identities and attribute coextensions. It is not permissible to invoke identities, as Causey has done, merely to remove the 'nomological danglers' [For more on this problem, see Ch. 2] and thereby allegedly remove the need for an explanation of the correlations. If some criteria were found for distinguishing identities from coextensions, then a case might be made for establishing certain correlations as identities in order to

explain them. However, the problem of finding criteria capable of distinguishing identities from mere coextensions remains.

Causey appears to recognise this problem when he cites the example of the reduction of temperature to mean kinetic energy, claiming that:

> "when dealing with a particular case, such as this controversial temperature example, it may be quite difficult to decide whether it is an identity or a correlation."[Ibid.:88]

Yet he makes no attempt to suggest how this difficulty might be resolved. If the correlation between temperature and mean kinetic energy - an example so often quoted as a paradigm of reduction - is regarded as problematic by Causey, then the prospects for his analysis being able to decide whether or not a reduction-relation holds between any other two theories, seem rather slim. So while Causey's account seems to cope reasonably satisfactorily with the connections to be established between thing-predicates in reduction, it fares less well with the connections required between attribute-predicates.

Alternative ways of construing these connections will have to be considered. I shall now turn to some of the work of David Lewis [Lewis 1970, 1972] to see if this can throw any light on reductive connections between attributes or properties. One of Lewis' most important claims with regard to these connections is that the empirical evidence which supports a synthetic, nomological coextension between attribute-predicates or properties may provide sufficient justification for a claim of identity and consequently of

reduction. Indeed, he claims the empirical evidence may necessitate the stronger claim of reduction. The argument for this is dependent upon Lewis' unique characterisation of theoretical or T-terms. Theoretical terms as Lewis uses them are not to be contrasted with observational terms. In his terminology, they are contrasted with 'old' or O-terms in the following way: a T-term is one which is introduced by a given theory at a particular stage in the history of science, while an old term is any other term, an original term, one that is understood prior to the introduction of the new theoretical term. [Lewis 1970:79, paraphrased]

Lewis contends that T-terms can be characterised exclusively by familiar old terms of the theory in which they are introduced. The characterisation takes the form of a Ramsey sentence in which the T-terms are replaced by existentially bound variables. In order to apply the Ramsey technique, it is necessary to assume that all newly-introduced T-terms can be reformulated as names so that they can be treated as singular terms in the Ramsey quantification. For instance, the clause 'x is an electron' would be replaced by 'x has the property electronhood'. Lewis claims that it is reasonable to assume that this replacement can be effected with little or no cost.

> "We may stipulate that our T-terms are names, not predicates or functors. No generality is lost, since names can purport to name entities of any kind: individuals, species, states, properties, substances, magnitudes, classes, relations or what not." [Ibid.:80][5]

This acomplished, it is possible to replace the postulate introducing the T-terms by a Ramsey sentence which only makes use of old terms. The Ramsey sentence will have the following form:

$(\exists x_1, \ldots, x_n)$(Each x_i stands in a certain, specified relation to the theory in question, where this relation can be specified using exclusively old terms.)

It is important to consider just how Lewis construes the relation between the variable standing in for the T-term and the theory in which it is introduced. Basically he thinks that T-terms are introduced into a theory by an implicit functional definition according to which

> the entities named by the T-terms occupy certain *causal roles*; they stand in specified causal relations to entities named by O-terms, and to one another." [Lewis 1972:253]

What is important is that these causal roles and causal relations *define* the entities named by T-terms. This leads Lewis to make the very strong claim that anything which occupies the specified causal role *i.e.* which realises the Ramsey-sentence for a particular variable, must be identified as the entity named by the T-term. By implication, if there is more than one name which can be substituted for any of the x_i *i.e.* if the Ramsey-sentence admits of multiple realisation, then the identification of the entities named logically follows.

These arguments have important consequences for the Condition of Connectability for reduction. Under more traditional accounts of reduction, the necessary identities depend on independent bridge laws linking the terms of T2 with those of T1. Lewis rejects this because he denies that the bridge laws are independent. Rather, on his account

> "they may follow from the reducing theory, via the definitions of the theoretical terms of the reduced theory. In

> such cases it would be wrong to think that theoretical reduction is done voluntarily, for the sake of parsimony, when the reduced and reducing theories are such as to permit it. Sometimes reduction is not only possible but unavoidable." [Lewis 1970:78]

What Lewis is claiming is that the empirical introduction of a new T-term by a functional definition of its causal role in O-terms would be sufficient to ensure that the T-term is reduced to O-terms. It is important to stress that 'reduction' here refers only to the satisfaction of CC, and the ontological economy it encompasses. Lewis is not arguing for a position of explanatory unity and consequently his position would not satisfy the dual conditions for reduction discussed earlier in this chapter.

Unfortunately, there are problems for Lewis's technique of establishing CC for reduction. It will be noted that Lewis' account depends on the possibility of replacing T-terms by names. In the discussion of Causey's analysis of reduction, it was mentioned that Causey used thing-predicates as names for kinds of things. In view of his very general construal of all grammatical predicates as names and his characterisation of basic and compound things or elements in terms of their characteristic structures, this seemed quite acceptable. The problem that arises for Lewis, however, is whether or not attribute- or property-predicates can be similarly assumed to be names of attributes or properties. This is in the context of Lewis' much more rigorous construal of names, where the names of properties are treated as singular terms.

One difficulty with this is that reformulating the property of 'being an electron' as the name 'electronhood', as Lewis' theory requires, is not intuitively plausible. The name 'electronhood' is not normally used in theories. What then is Lewis' justification for insisting on it? Lewis' motives for the reformulation are quite simple: it is only where the variables of the Ramsey-sentence range over singular terms, that multiple realisation would imply identification of the entities named by the singular terms. If the variables ranged over properties and it was discovered that more than one property fulfilled the causal role specified by the Ramsey-sentence, then it would follow only that the properties were nomologically coextensive, and not that they were identical. This in turn, for the reasons discussed above, would not necessitate reduction.

It seems that Lewis is stipulating the reformulation of names specifically to achieve identification and hence, connectability for reduction. Although this raises a suggestion of trickery, no charges can be laid unless examples of T-terms could be provided which were incapable of reformulation. I am not able to provide any.

There is an additional problem, though. Lewis' account depends on the possibility that the reformulated T-terms can be given a functional definition in terms of their causal role. In defending such a position, Lewis is in good company. Sydney Shoemaker

advocates a similar method for the identification of properties and this will be considered.[6]

This causal criterion for the identification of properties may be construed as a way of accommodating a possible objection to Lewis' account of the identity of properties. Reduction generally, and hence CC as well, are most often taken to describe a relation between two theories, each of which functions as a systematised whole. Yet Lewis' account seems to focus on T-terms rather than theories. In what sense then, it may be objected, would Lewis's account of CC form part of an analysis of reduction?

Firstly it should be noted that the T-terms in Lewis' theory are not considered in isolation. The postulate characterising the theory in which the T-terms are introduced, always refers to a range $t_1,.....,t_n$ of T-terms (over which the variables of the Ramsey-sentence range). Lewis' account specifically caters for a number of T-terms being introduced simultaneously. However, it is far more important to note that even though a T-term might conceivably be introduced on its own, it would nonetheless not be defined in isolation. T-terms are defined in terms of their causal roles in the theory and their causal relations with other terms in the theory.

> "The T-terms have been defined as the occupants of the causal roles specified by the theory T; as *the* entities, whatever those may be, that bear certain causal relations to one another and to the referents of the O-terms."
> [Lewis 1972:254]

The causal roles of terms in a theory will be inter-related and dependent on other terms in the theory and the roles of these terms. Thus the causal criterion for property identity reflects the way in which a theory generally functions as a unified, inter-related whole.

Consequently a complete definition of a property P in terms of its causal role would need to take account of the causal roles of other properties in the theory as well. To this extent, the causal role of P may be construed as an INUS condition for P's identity, the full condition involving other properties in the theory[7]. This dependence of P on other properties presumably accounts for Lewis' insistence that his theory only applies to a system where the interpretation of the O-terms is fixed. If the meanings of the O-terms could vary, there would be no possibility of giving a fixed, causal definition of the T-terms.

Lewis' proposal to identify properties in terms of their causal roles and relations seems to be the most promising way of getting the connections between properties that are required for CC in reduction. However, he does not offer a detailed account of exactly *how* causal roles and relations furnish properties with their identity. Fortunately, such an account has been provided by Shoemaker [Shoemaker 1984].

An essential preliminary to Shoemaker's account is his restriction of the analysis to 'genuine' properties, excluding 'mere-Cambridge' properties.

> "A property is genuine if and only if its acquisition or loss by a thing constitutes a genuine change in that thing" [Ibid.:207-8]

while a 'mere-Cambridge' property is any other. What this amounts to is that a genuine property is one that makes a contribution to the causal powers of the object that has that property. So Shoemaker's account is not applicable to any properties which could not affect the causal power of the object of which they are properties *e.g.* mathematical properties would not be construed as genuine properties on this account. Shoemaker emphasises that it is certainly not the case that for every predicate there will be a corresponding genuine property.

Although different from Causey's characterisation of attributes in terms of their classificatory powers, Shoemaker's characterisation of properties in terms of their causal salience is in some ways comparable to Causey's. Causey's classificatory attributes were only of use in the classificaton of things into kinds: they cast no light on attributes *per se*. Shoemaker's causal salience can certainly be applied to the attributes or properties of an object - indeed it is most likely that the causal powers of an object will be partly determined by its attributes. So there is a *prima facie* case for Shoemaker's analysis succeeding where Causey's failed in helping to furnish the formal conditions for the sort of connections required between attributes in a reduction-relation.

It has already been insisted that the connections between attributes should not require additional explanation or it will never be possible to achieve the explanation of T2 in terms of T1 and the connecting sentences that reduction requires. It has also been claimed that identities between properties would be a suitable relation, because the identity of properties needs no explanation while their coextension would. So it seems reasonable to consider whether or not Shoemaker has been able to provide acceptable criteria for property-identity, criteria which Causey failed in his attempt to provide.

Properties do not exist on their own, they are always properties of things. Shoemaker contends that genuine properties should be individuated according to the potential they have for affecting the causal powers of objects that possess them. Two properties will be identical if they make the same contribution to the causal powers of the things that have them. It is necessary to specify what the 'causal powers' of objects are and how they are to be evaluated.

> "An object has power P conditionally upon the possession of the properties in set Q if it has some property r such that having the properties in Q together with r is causally sufficient for having P, while having the properties in Q is not by itself causally sufficient for having P...When a thing has a power conditionally upon the possession of certain properties, let us say that this amounts to its having a *conditional* power...Properties are clusters of conditional powers." [Ibid.:212-13, emphasis in the original]

So a property, r, is specified in terms of what it gives an object the power to do when that object has r in conjunction with another set of properties. In isolation, a property may have no conditional power worth mentioning, *i.e.* it is likely that an object with a unique property will have highly restricted causal potential.

But most often an object has a number of properties and the conditional power of the object is dependent on the simultaneous possession of all these properties. The causal potential of a property will depend on its being realised in conjunction with the other properties. The properties that cluster together to yield the causal power of the object of which they are properties, should have a certain causal unity. In particular, the object should have greater causal power when an additional property is added to the set of properties than it had before. There should be no properties which contribute nothing to the causal power of the object.

From this the following characterisation of property-identity may be inferred: two properties are identical if their coinstantiation with a set of properties, Q, gives rise to the same causal powers for the object which has these properties. Shoemaker admits that this does not provide a definition of the identity of properties:

> "This is, if anything, even more circular than it looks. For it crucially involves the notion of sameness of powers, and this will have to be explained in terms of sameness of circumstances and sameness of effects, the notions of which both involve the notion of sameness of property. And of course there was essential use of the notion of a property in my explanation of the notion of a conditional power." [Ibid.:221]

Although this will prevent the reductive definition of properties in terms of causal powers, it does cast light on the way in which properties and causal powers are related. It will be remembered that what was initially sought were criteria of identity for properties. What Shoemaker has provided is not so much a criterion of identity, as an indication of the way in which properties and

causal powers are inextricably interrelated. This will suffice for CC in so far as it provides a way of establishing the identity of properties once it has been discovered - and presumably this can be achieved empirically - that the causal powers to which the properties give rise *i.e.* the causal powers of the objects which have these properties, are the same.

In addition to this, it seems reasonable to require of two properties, before they are identified, that they should give rise to the same causal powers for the object that has them, when they are instantiated in conjunction with *any* set of properties that the object can possess, where this conjunction increases the causal power of the object in question. This should establish the requisite generality of property-identity. It is not enough for property identity that properties have the same causal power under a particular set of circumstances; rather their causal potential must be identical in all circumstances in which they might be instantiated.

Admittedly, this account of the identificaton of properties in terms of their generalised causal potential is very stringent. However, it may be shown to apply to such pairs of properties as 'having a certain temperature' and 'having a certain mean molecular kinetic energy', or 'having a certain colour' and 'reflecting light of a certain wavelength'. These satisfy our intuitions about properties which are identified by means of synthetic connections. This causal criterion provides a sufficient condition for

establishing the identity of properties. There may of course be other sufficient conditions for property identity, but this is not of importance here. The discussion above will suffice to show how CC can be fulfilled for properties.

It has now been shown how CC for reduction generally might be satisfied: correlations between both the things and properties of T2 must be established with the things and properties respectively of T1. In considering Causey's analysis, it was seen that if thing-predicates are taken to function as names for kinds, then the discovery of a coextension of thing-predicates will ensure the identity of the kinds of things. Causey's analysis was less successful in dealing with the connections to be established between properties. An exposition of Lewis gave an initial insight into how the identification of properties might be achieved, and Shoemaker's account of property identification provided the detailed means for doing this. Shoemaker's correlations between properties require it to be necessary *de re* that the properties realise the same causal potential in the objects that possess them. These will constitute sufficient grounds for establishing the identity of any properties that achieve this.

Admittedly, it will be extremely difficult, or impossible, to justify a claim for the identification of properties empirically. The introduction of a modal operator immediately removes the correlation from the realms of the empirically testable. Moreover there are problems in specifying exactly how the potential causal

powers of objects are to be estimated or compared. This is indeed a problem for reduction, but it should not be taken to vitiate the analysis of this chapter. All that it was intended to offer here was a characterisation of the formal criteria for satisfying the condition of connectability for reduction. This has now been specified. Before a relation of reduction could plausibly be asserted, however, it would be necessary to provide comparable formal criteria for the Condition of Derivability as well. Both sets of criteria would need to be satisfied for reduction to obtain.

Finally, consideration will be given to the implications of the analysis of this chapter for the relation between theories of social phenomena and theories of individualistic phenomena. Is it plausible that CC could be satisfied between theories of these kinds as the first step in establishing that the relation between them is one of reduction? These considerations will be brief, since I take it that CC as specified above as one of two conditions for reduction makes reduction rather too rigorous a candidate to be taken very seriously for the socio-individualistic relation. In addition, it might well rule out other pairs of theories where the relation between them is far more uiversally accepted to be one of reduction. This should not be taken as a very serious objection to the present discussion, since weaker relations between theories will be developed and discussed in subsequent chapters.

There are a number of respects in which the relation between social and individualistic theories will struggle to satisfy CC.

Firstly, with regard to the connections to be established between the entities of the two kinds of theories, Causey's analysis, on which my discussion largely relies, concentrated on micro-reductions in which the entities of T2 were taken to have parts which were found among the entities of T1. This assumption cannot be accepted in the socio-individualistic case. Admittedly, social entities have parts which are individuals. The problem is that many social entities like clubs, institutions, organizations, political parties *etc.* have past and future members too who, while they may be individuals, are the entities of individualistic or psychological theories in a very tenuous sense only. This makes it impossible to identify such a social entity with any specific set or group of individualistic entities. We can never know, for instance, which individuals to include in the membership of an institution.[8] This is one sense in which the whole *i.e.* the social entity, is greater than the sum of its individualistic parts.

The socio-individualistic relation will also fail to satisfy CC for properties. The criterion for property identity of necessarily equivalent causal relevance requires that every social property make a causal contribution which is necessarily equivalent to the contribution of the individualistic property or properties with which it is correlated. It seems unlikely that the relation between social and individualistic theories will ever fulfil this criterion. Firstly there are the practical difficulties which will be encountered in implementing this criterion. Exactly how the causal relevance of social and individualistic properties is to be

evaluated and compared is far from clear. There is no obvious scale of causal relevance. Moreover, while it may be the case that physical theories are formulated rigorously, their social conterparts generally are not: a social theory is seldom available as an integrated system of laws with the causal roles of all its properties precisely and unambiguously specified. This is admittedly merely a practical difficulty for the criterion, but there is a more serious conceptual one to be considered.

Social properties are generally used in a social context. While they will not always be possessed by social objects or events (*e.g.* an individualistic entity, say a woman, may have the social property of being Queen of England), social properties nonetheless convey social information - 'that Elizabeth II is Queen of England' is a social fact. By definition, the content of these properties is social and their relevance in a causal relation will be a social relevance, even though it may influence individuals. Individualistic properties function in exactly the converse way. While they may be predicated of social objects, as in 'the Queen is right-handed', they will convey individualistic information and have individualistic causal relevance. In this instance it is the Queen as an individual and not as the Queen who is affected by being right-handed.

In the light of this, it is very unlikely that the causal significance of social and individualistic properties may ever be equated. Even if the two kinds of properties were possessed by the

same objects - say the properties were necessarily coextensional - they would have different content, reflected by their different causal relevance in different contexts. Explanatory contexts may be cited as a case in point where it is very unlikely that an individualistic explanation - depending exclusively on individualistic entities and properties - could be substituted in all contexts where a social explanation was proffered without loss of explanatory content.

In this respect, the relation between social theories and theories of individuals will fail to satisfy CC. Given that CC is an essential part of reduction, it follows that the relation between social and individualistic theories cannot be one of reduction. This conclusion may seem premature, given that virtually nothing has been said about the condition of derivability, and the possibility that the relation between social and individualistic theories may satisfy this. It is possible, even plausible, that notwithstanding the difficulties encountered in obtaining rigorous correlations between the entities and properties of T2 and T1, T1 may be able to explain everything that T2 can explain and the laws of T2 may be derivable from the laws of T1.

Such considerations fall beyond the scope of this thesis. They would take us away from the metaphysical relation between social and individualistic theories which is our concern and into questions of epistemology and methodology. For this reason they are not being considered at all. Admittedly this leaves the discussion, as a

discussion of reduction, incomplete. Yet as a discussion of the conditions required for the metaphysical relation between social theories and theories of individuals to be one of reduction, I hope it is less so.

The relation between social theories and theories of individuals fails to satisfy the conditions for reduction. In particular, social entities and properties cannot be identified, by the criteria of identification discussed, with individualistic entities and properties. Where does this leave the discussion? One obvious line to pursue would argue that the theories are nonetheless related, but not by the relation of reduction, since the connections between their entities and properties are weaker than identities. It is this possibility which will be considered in the next chapter.

CHAPTER 2

PHYSICALISM AND DETERMINATION

Serious doubts have been cast on the possibility of ever establishing the reducibility of social theories to theories of individuals *i.e.* of reducing the social sciences to the psychology of individuals, neurophysiology and physics. The possibility of providing identities between social phenomena and individualistic phenomena seems unlikely to be achieved in practice or indeed to be achievable in principle. It is now time to consider what follows from this. In particular, in this chapter, an alternative position will be considered which, while denying the identities necessary for reduction, nonetheless asserts the priority of the physical and the dependence, in a way that will be elaborated, of all other levels of phenomena on physical phenomena. Such a view has been variously called physicalism, materialism or monism by those who have attacked or defended it.

It will be partly the purpose of this chapter to show that it is possible to defend such a position without simultaneously being committed to the existence of general identities between the phenomena of the two levels being related. In particular the physicalist position of Geoffrey Paul Hellman and Frank Wilson Thompson [Hellman and Thompson 1975] will be detailed and contrasted

with some alternative physicalist positions *viz.* those of Thomas Nagel [Nagel 1965] and Jaegwon Kim [Kim 1979]. Some problems with this relation that have been discussed by Jaegwon Kim [Ibid.] and David Papineau [Papineau 1985] will also be considered. I hope to show that the objections they raise to the theory of physicalism can be countered.

First it may be helpful to point out that in what follows, it is again only ontological or metaphysical considerations that will be of interest. The issues - no doubt important ones - of how events in the social realm are to be explained and whether or not such explanations can be comprehensive without including ineliminable reference to social phenomena, will not be touched on at all. This will simplify and focus the discussion considerably, without however removing all difficulties and points of philosophical interest.

There is one particular philosopher who has defended the position of physicalism without reduction and who has exerted a seminal influence on the debate. This is Donald Davidson, in his paper, "Mental Events" [Davidson 1980]. In this paper, Davidson defends the position he calls anomalous monism. It is not my intention to assess Davidson's position in depth in this thesis. Suffice it to say that the premises on which the position is based and the arguments Davidson puts forward in support of it are not uncontentious. But any detailed evaluation of them would not be complete without a discussion of the broader philosophical position Davidson defends. This would lead into a philosophical detour which

I would not be confident of being able to conclude satisfactorily and which would not advance the main argument of this thesis.

Consequently, all that will be offered here is a brief outline of Davidson's position of anomalous monism. Some of its unique features will be highlighted. Then in the more detailed discussion which follows of Hellman and Thompson, Nagel, Kim and Papineau, every attempt will be made to relate these positions back to the general context of Davidson's anomalous monism. This approach is not without difficulties, as Nagel's work on physicalism predates Davidson's, so there is no question of the former's position being influenced by, or defended as a response to, the latter's. Notwithstanding this, it is Davisdon's anomalous monism which will be used as the starting point for this chapter, because it offers a *prima facie* plausible position which is weaker than reduction but nonetheless defends the priority of the physcal with regard to the mental.

Davidson's position emerges from the reconciliation of the following three premises which might, initially, appear to be inconsistent.

i) The principle of causal interaction. This is the claim that at least some mental events cause physical events and at least some physical events cause mental ones. Examples of both kinds of interaction are not difficult to find.

ii) The principle of the nomological character of causality. This principle asserts that all instances of cause and effect relations are lawlike; any two events related as cause and effect fall under some strict deterministic law in virtue of being causally related.

iii) The anomalism of the mental. There are no strict deterministic laws in accordance with which mental events can be explained or predicted.

Premise (iii) entails that there are no strict psycho-physical laws. Consequently, causal relations between mental and physical events cannot rely on psycho-physical laws. Yet, in accordance with the principle of the nomological character of causality, premise (ii), they must rely on *some* laws. It follows, argues Davidson, that these laws will have to be physical laws. But physical laws relate events under physical description. Therefore physical events will be causally related to mental events under physical descriptions. Thus these mental events will be physical events *i.e.* there is a token-token identity between each of these mental events and some physical event. This token-token identity is significantly weaker than the type-type, or general, identity which would be required between events if a relation of reduction were to be defended. This provides an outline of Davidson's position of anomalous monism, a position which combines the causal depedence and the nomological independence of the mental with respect to the physical.

The precise nature of the relation between the mental and the physical marks one of the strongest points of disagreement among philosophers variously defending monism, physicalism or materialism. Are mental phenomena identical to physical phenomena and, if so, how exactly is this relation of identity to be interpreted? In addition to this, there is the question of whether or not the mental can be nomologically independent of the physical. These issues will emerge repeatedly in the ensuing discussions of the positions of Hellman and Thompson, Nagel, Kim and Papineau.

For Hellman and Thompson, there are two independent conditions, the joint satisfaction of which is necessary and sufficient for their position of physicalist materialism. These are the Principle of Physical Exhaustion (PPE) and the Principle of Physical Determination (PPD). The first condition, PPE, is individually necessary, but not sufficient for physicalist materialism. This condition represents the purely ontological claim that everything that there is, is exhausted by mathematical-physical entities. The second condition, (PPD), captures the idea that once the physical realm is fixed, all other levels of phenomena are thereby fixed as well.

Let us consider these two principles more closely, since it is their detailed formulation, and that of PPE in particular, which renders Hellman and Thompson's characterisation of physicalist materialism rather surprising and, I will argue, uniquely attractive. PPE asserts that

> "everything concrete is *exhausted* by basic physical objects, without thereby implying that everything is in the extension of a basic, physical predicate." [Hellman and Thompson 1975:555]

Hellman and Thompson take it as a sufficient condition for something to be a physical entity that it satisfies a basic, positive, physical predicate at a place. A list could be drawn up of all such basic, physical predicates with their places of instantiation specified *i.e.* where they apply to objects in space-time. Then, for any object, a subset of the above set may be formed, whose elements are all the physical predicates applicable to that object. This set of predicates, given that its place of instantiation is specified, will be satisfied by a unique object. In other words, the subset of predicates has an extension at a concrete place which is satisfied by one entity alone. This entity may then be said, in Hellman and Thompson's vocabulary, to be exhausted by physical entities. However there need be no one physical entity with which it is identical; nor need this entity fall within the extension of any single, basic, physical predicate.

The same reasoning may be applied to all entities. Consequently any entity, say a social entity such as the London Stock Exchange, can be given a characterisation in terms of multiple, basic, positive, physical predicates which will characterise that entity uniquely. This is the extent to which the social entity is *exhausted* by physical objects. Yet this does not imply that the entity is itself in the extension of a basic physical predicate *i.e.* the social entity is not identical (*pace* Davidson) with any physical

entity. Consequently, this does not make the object a physical object since it is the satisfaction of a *basic*, positive physical predicate at a place that constitutes a sufficient condition for an object's *being* a physical object.

It has been mentioned above that PPE is a necessary, but not a sufficient condition, for Hellman and Thompson's position of physicalist materialism. The point is simply this: PPE is too weak to cover the *determination* of all entities or phenomena by physical entities or phenomena. The notion of physical exhaustion is a weak one in so far as it says nothing about the priority of the physical level over other levels of phenomena. It merely asserts that each object can be given some characterisation or other in terms of physical predicates, but it makes no claim that this physical characterisation underpins the object or is more fundamental than, say, the social characterisation of a social object.

In order to establish the priority of the physical, the Principle of Physical Determination is required. This principle, PPD, states that if a comprehensive characterisation of the phenomena has been given in terms of physical predicates, then one and only one characterisation in terms of social or psychological predicates can be given with which it is compatible. In other words, once the physical level has been fixed, the social and psychological levels will also have been fixed if the physical level determines the social and psychological levels. Another way of expressing this, would be to say that

> "If one kind or realm of facts determines another, then, at a minimum, the truth values of sentences expressing facts in the latter realm cannot vary without variance of the truth values of sentences expressing facts of the former kind." [Ibid.:558]

An analogous version of the principle can be given for references of the terms of one level determining the references of the terms of the other level.

There are two points related to PPD which are worth noting. The first is that PPD will involve the establishment of connections between the terms of the determining and the determined levels of phenomena. Hellman and Thompson call these connections 'bridge laws', which is potentially misleading, since these so-called 'bridge laws' are by no means sufficient conditions for reduction (which is arguably the sense in which bridge laws have been used by others, notably Ernest Nagel [Nagel 1961: Ch.11]). The second point to note in connection with PPD is that it is making a modal claim *viz.* that the truth values of sentences at the determined level *cannot* vary without a variation in the truth values of sentences at the determining level. The strength of this modal operator needs to be specified. Hellman and Thompson are very precise on this: the modal operator refers to scientific possibility. Thus PPD ranges over different possible worlds in all of which the laws of science hold.

These two principles, PPE and PPD, jointly constitute the version of physicalism which Hellman and Thompson believe is plausible. Before we will be in a position to assess their claim,

it will be helpful to see how this position differs from reduction. If all entities are exhausted by physical entities and if physical phenomena determine all the phenomena there are, then there seems to be at least a *prima facie* case for claiming that Hellman and Thompson's position is just a version of reduction. The grounds on which they deny this charge will be considered. To do this, another of their principles needs to be introduced, *viz.* the Principle of Physical Indiscernibles. This principle, which is a version of Leibniz' Law, states that two objects which have all their physical predicates in common, will necessarily be the same object. This is very close to the claim made by PPD for the relation between the truth values of sentences at the determining and determined levels.

From the Principle of Physical Indiscernibles, together with PPE, it can be inferred that if two objects have different social or psychological predicates, then there must be a difference in their physical predicates. The latter point amounts to the claim that there can be no social/psychological difference or change without some physical difference or change. These two claims can be expressed formally as follows, where ϕ ranges over physical predicates, ψ ranges over nonphysical predicates and u and v are arbitrary objects:

1) $(\forall u)(\forall v)(\forall \phi)\{(\phi u \leftrightarrow \phi v) \rightarrow (u = v)\}$

2) $(\forall \psi)(\forall u)(\forall v)(\exists \phi)\{(\psi u \ \& \ -\psi v) \rightarrow (\phi u \ \& \ -\phi v)\}$

There is a crucial difference between the claim expressed by (2) and that of (3):

3) $(\forall\psi)(\exists\phi)(\forall u)(\forall v)\{(\psi u \,\&\, \neg\psi v) \rightarrow (\phi u \,\&\, \neg\phi v)\}$

(3) implies the following claim, as Hellman and Thompson have pointed out, by first order quantifier logic, provided ψ is neither universal nor null [Ibid.:556, Note 8]:

3') $(\forall\psi)(\exists\phi)(\forall u)(\psi u \leftrightarrow \phi u)$

Their qualification has to be taken to rule out the possibility of (3) being true, purely by virtue of ψu being false. If ψu is false, $(\psi u \,\&\, \neg\psi v)$ is false and so $\{(\psi u \,\&\, \neg\psi v) \rightarrow (\phi u \,\&\, \neg\phi v)\}$ is automatically true.

However, in this scenario, it would be quite possible for (3') to be true. This would contradict Hellman and Thompson's claim that (3) implies (3'). For this claim to hold, ψu must not be false. On reflection this is not an unreasonable caveat, as their whole position hinges on the physical predicates attributable to objects which underpin the non-physical predicates of those objects. They have no need to consider predicates, physical or otherwise, which are *not* attributable to objects.

The difference between (2) and (3) can be illustrated by the following example in which (2*) and (3*) differ in an analogous way:

(2*) Everyone loves someone.

(3*) There is someone everyone loves.[1]

(3) and (3') amount to the claim that every non-physical predicate is extensionally equivalent to a physical predicate. This may be construed as a weak form of reduction, implying that a definition of any non-physical property can be given in terms of physical properties, or at least that a coextension between the two can be established. Hellman and Thompson's claim, (2), does not assert this. Indeed, they deny that their position of physicalist materialism makes any claims about reduction, or even about accidental extensional equivalences between physical and non-physical predicates. It is essential for an understanding of their position that the difference is recognized between PPE, an ontological principle, and (3) and (3') above.

PPE asserts that every object is exhausted by physical objects; it is linked to (2) above, which is a claim about predicates, asserting that for every predicate distinction at the nonphysical (*e.g.* social) level, there is a physical predicate which makes the same distinction. No generalization, accidental or lawlike, is implied by Hellman and Thompson's claims. By contrast, claims (3) and (3') are much stronger, to the extent that they require the existence of identities or coextensions between the predicates, or possibly the properties, of the physical and non-physical levels.

Hellman and Thompson's ontological claim and the stronger claims of (3) and (3') are independent. Non-physical objects may be exhausted by physical objects, in the sense detailed earlier, even

though there are no coextensions between nonphysical and physical predicates or properties. It is fairly intuitive to see that claim (2) above does not imply claims (3) or (3'), since it is weaker than them. But Hellman and Thompson have also shown that the definitional claims, (3) and (3'), do not imply the exhaustion of one level of phenomena by the other. In particular, they have demonstrated the possibility of constructing a simple theory in which all macro-predicates are definable in terms of micro-predicates, yet in which the macro-entities are not exhausted by micro-entities [Ibid.:557]. This completes the proof of the independence of the ontological claim of physicalist materialism and any claims for the identity or co-extensionality.[2]

To develop an ontological claim for physicalism, which requires neither identities nor coextensions between entities, is the great advance that Hellman and Thompson have made in this debate. In so far as it was the establishment of identities between properties of the reduced and reducing levels which brought serious attempts at reduction to grief, this position is superior, having avoided all such problems. However, whereas reduction is essentially a programme that accommodates scientific advance and the development of new laws, linking phenomena which were previously thought to have been of distinct kinds, Hellman and Thompson's physicalist materialism has no claim to be such a naturalistic doctrine. The establishment of their ontological claim is extremely artificial and is mostly likely to satisfy philosophers only. Nontheless, it cannot be denied that it contributes to a defence of the priority of physics

by offering a unique characterisation of how everything might be physical, without each non-physical entity being identical with some physical entity.[3]

Notwithstanding differences with regard to the identity of the mental and the physical, there is a certain *prima facie* agreement between Hellman and Thompson on the one hand and Davidson on the other since Hellman and Thompson's physicalist materialism does not rely on the existence of any lawlike generalized biconditionals (psycho-physical laws) between mental and physical predicates.

Hellman and Thompson's position of physicalist materialism has now been considered in some detail. However, they are not the only ones to have defended such a position. It will be instructive to draw some comparisons between their position and some of the other physicalist positions. Firstly, Thomas Nagel's position in [Nagel 1965] will be considered. Nagel defines physicalism as

> "the thesis that a person, with all his psychological attributes, is nothing over and above his body, with all its physical attributes." [Ibid.:339]

Presumably this characterisation would be broad enough for Hellman and Thompson to have no quarrel with it. It is also correspondingly vague and, consequently, not especially interesting. But Nagel goes on to specify a more precise typography of four different versions of physicalism of varying strengths. Nagel's typography is as follows:

> "i)An implausibly strong physicalism might assert the existence of a general identity between each psychological condition and a physical counterpart.

ii)A weaker view would assert some general identities, particularly on the level of sensation, and particular identities for everything that remains.
iii)A still weaker view might not require that a physical condition be found identical even in the particular case with every psychological condition, especially if it were an intensional one.
iv)The weakest conceivable view would not even assert any particular identities, but of course it is unclear what other assertion by such a theory about the relation between mental and physical conditions might amount to a contention of physicalism."
[Ibid.:340]

This typography relies on two main distinctions: firstly there is the distinction between particular and general identities, secondly there is the rather looser distinction between psychological states of the sensation variety and those of the intensional variety. With regard to the latter distinction, Nagel is surely right to assume that it will undoubtedly be easier to establish firmer correlations between sensation states and physical states than between intensional states and physical states. This distinction between kinds of mental states has not been invoked above, not because it is irrelevant or implausible, but rather because we have been concentrating on the more difficult states to characterise physically, *viz.* intensional states, on the assumption that if a physicalist position can accommodate these, it will almost certainly be able to accommodate the sensation states as well. So Nagel's second distinction will not be of undue concern to us.

The first distinction, between general and particular identities will be important, however. One way of understanding this distinction is to see it as parallelling the distinction between

type-type identities and token-token identities. Characterised thus, it will also enable us to relate the physicalist position of Nagel back to Davidson's anomalous monism, since the latter is formulated in terms of token-token identities.

Nagel himself seems to think that, while it may be possible to get general identities between some kinds of sensation states and physical states, this would be most unlikely, if not impossible, for intensional mental states. From this it follows that version (ii) of physicalism is the strongest one he would wish to defend. The only versions he considers seriously are (ii) and (iii), since he is uncertain that (iv) is a statement of physicalism at all. If we restrict ourselves to Nagel's typography for the moment, then it seems that the only version of physicalism which Hellman and Thompson could be seen as defending would be (iv). This should not be surprising, when it is remembered that Hellman and Thompson specifically deny the existence of identities between types or tokens of non-physical and physical entities or predicates. Hellman and Thompson's characterisation of physical exhaustion and physical determination are meant to provide just such another assertion

> "about the relation between mental and physical conditions [which] might amount to a contention of physicalism." [See category (iv) of Nagel's typography, above]

However, it remains slightly puzzling just what the relation is between non-physical and physical predicates for Hellman and Thompson. They describe it partly as physical exhaustion, but this is rather metaphorical. While they clearly mean to rule out the

possibility of the connections between non-physical and physical predicates and entities being type-type identities, it is not quite so obvious why the connections could not be token-token identities. At one point, Hellman and Thompson describe the connections as bridge laws [Hellman and Thompson 1975:559], but this is rather misleading since they appear to construe 'bridge laws' as provided by *any* connections between phenomena of the two levels.

The existence of bridge laws is not supposed to conflict with their claim that

> "the truth of physicalism is compatible with the utter absence of lawlike or even accidental generalized biconditionals connecting any number of predicates of the higher-level sciences with those of physics." [Ibid.:564]

This, in turn, must be taken to be consistent with the following:

> "physicalism without reductionism does not rule out endless lawful connections between higher-level and basic physical sciences." [Ibid.:552]

This makes the Hellman and Thompson position a fairly complex one to put together. Let us construe it as the claim that, although there may be some instances of lawful connections between non-physical and physical predicates and entities, (presumably these would take the form of lawlike generalized biconditionals), other non-physical predicates and entities may not even be related to physical predicates and entities by accidental generalized biconditionals. Nonetheless, even the latter non-physical predicates and entities are exhausted and determined, in the senses of PPE and PPD discussed above, by physical predicates and entities.[4]

The important thing to consider is surely the status of these so-called exhaustive connections which may be weaker than accidental generalized biconditionals. There seem to be two options: either they are not generalized, or they are not biconditionals. If they are biconditionals, but not generalized, then surely Hellman and Thompson's position is in agreement with Nagel's version (ii) of physicalism, since particular biconditionals are just what Nagel has in mind for the sorts of identities possible between intensional mental states and physical states. Furthermore, I can make no sense of particular biconditionals other than to see them in Davidson's terms as token-token identities. Mere coextension will not suffice even for Hellman and Thompson's position.

However, given that Hellman and Thompson deny that they rely on identities, perhaps this is not what they have in mind after all. Perhaps their connections are not biconditionals. This still leaves open the possibility for them to be either generalized or not. This construal is possibly more in accordance with one of the formalized claims of their position given above. Once again, ψ and ϕ stand for non-physical and physical predicates respectively, and u and v for arbitrary objects.

2) $(\forall\psi)(\forall u)(\forall v)(\exists\phi)\{(\psi u \ \& \ -\psi v) \rightarrow (\phi u \ \& \ -\phi v)\}$

The logical connective here is very clearly not a biconditional. Indeed they explicitly deny the version of this claim, with the quantifiers' positions switched, which would support a

biconditional. So the more plausible way to construe their physicalism would seem to be without biconditionals. If biconditionals are necessary for identities, their position does not assert identities and is thus not analogous to Nagel's version (ii) or (iii). It would then have to be categorized under Nagel's category (iv). Furthermore, on the issue of generalization, Hellman and Thompson's claim is generalized to the extent that it covers all non-physical predicates, but it is not generalized in so far as it asserts only a token-token connection for each particular instantiation of every non-physical predicate and not a generalized or type-type connection.

There seems to be one outstanding question: is the token-token connection which Hellman and Thompson assert between each non-physical predicate and some construct of physical predicates not the same sort of connection as Nagel would term a particular identity, and Davidson a token-token identity? I am inclined to think that it is, notwithstanding Hellman and Thompson's claim that the physical component of the connection will usually not be the extension of a basic, physical predicate, but will more often be a composite predicate, consisting of multiple, basic, positive physical predicates. Of course, to call such a connection an identity, does not undermine the distinction between their position of physicalism and reduction, since such particular, token-token identities could never provide the identities between types or kinds of non-physical predicates and the physical predicates which reduction requires. Ultimately, however, it can make little difference whether or not

the connection is *called* an identity. Some of the remarks below will have greater bearing on this issue.

Nagel is concerned to defuse the standard objections to identity theories by showing how the version of physicalism he is defending is not susceptible to them. (Of course, if Hellman and Thompson really can do without identities, then they would not have to answer these objections at all.) The objections are fairly standard ones:

i. if mental states are identical to physical states, then how is it that physical states have a definite location whereas mental states do not?

ii. Physicalism appears unable to account for the privacy and incorrigibility of our mental states - if we are in a certain mental state, then we cannot fail to be aware of this, whereas the same could not be said of our brain states.

Nagel's response to these is three-fold, with (a) and (b) addressing objection (i), and (c) addressing (ii).

a. The first objection is that any projected mind-brain identity theory will conflict with Leibniz' law which states that any two identical things will have all their non-modal and non-intensional properties in common. To avoid this objection, Nagel proposes to consider the identities, not between mental states and brain states *per se*, but rather the identification of

> "a person's having the sensation [or other mental state] with his body's being in a physical state, or undergoing a physical process. Notice that both terms of this identity are of the same logical type,

namely...a subject's possessing a certain attribute."
[Nagel 1965:341]

Thus the identification is not between a mental state and something physical *i.e.* a brain state, but rather between the mental state of a person and that person's physical state. At least on the question of their location, this identification seems to be relatively unproblematic.

b. Nagel's second response is to distinguish between strict identities and theoretical identities and to opt only for the latter. Let us consider this distinction. Strict identities are those which conform to Leibniz' law, and the relation of strict identity may hold between things, events or conditions. Theoretical identities are weaker than strict identities and depend, for Nagel, on the common possession of causal and conditional attributes. (This is closely analogous to the identity criteria for properties discussed in the previous chapter on reduction.) Two entities which are strictly identical will automatically have all their causal and conditional attributes in common and will thus be theoretically identical as well. However, in the case of events or attributes which are not strictly identical, it may nonetheless be possible to establish that they share all their causal and conditional attributes.

This would follow from the discovery of the general laws in virtue of which the causal relations are, or would be, instantiated. This is the procedure most often used when reductive identifications

are established in the natural sciences *e.g.* the identification of temperature with mean kinetic energy could be construed as having been established in this way. What has been established in this case is that temperature and mean kinetic energy have the same causal potential; they have the same actual and potential causes and effects. It is on the basis of this sort of identity that Nagel wishes to establish his version of physicalism. It is also on the basis of this claim that his position differs most sharply from some other physicalist positions, notably that of Davidson.

If they are to satisfy this condition of theoretical identity, the connections between mental and physical attributes or properties will have to be more than constant conjunctions. Indeed both particular and general theoretical identities will have to follow from general laws or a general theory. This might seem to be a surprisingly strong criterion at first glance. However, it is qualified, for Nagel recognises the possibility that

> "the common possession of conditional attributes can follow for a particular case from general laws, without its being true that there is a general correlation between macroscopic and microscopic phenomena of that type." [Ibid.:348]

What this qualification amounts to is the recognition that mental (or other macro-) properties may be variably realised by physical (or other micro-) properties, so the correlation between them may be one-many. Each mental-physical disjunctive, theoretical identity must, however, hold in virtue of a general law.

> "The technical sense in which even in such cases the particular identity must be an instance of a general one is that it must be regarded as an instance of the identity between the macroscopic phenomenon and the

> disjunction of all those microscopic phenomena which are associated with it in the manner described, via general laws." [Ibid.:348-49]

Nagel concedes that not all cases of variable realisation will hold in virtue of general laws. Very briefly, he describes such correlations as evidence of a non-symmetrical relation of '...consists of...', which he denies is a variety of identity. In these cases, the disjunction of micro-states will be too diverse to fall under any general laws. Nagel cites the example of World War II and all the actions and events which constituted it as an example of a macro-property-micro-property relation where the correlated micro-property is a conjunction of properties which are too numerous and diverse to fall under a general law as a unique entity.

It seems highly likely that this will be the case for most macro-micro relations at the social level. Of more immediate significance, though, it seems that Hellman and Thompson's relation of physical exhaustion would fall under this category too, as it is extremely unlikely that there would ever be general laws between mental predicates and the complex constructs of basic physical predicates on which their connections depend. Thus if Nagel's characterisation of identity is accepted, then it would certainly be possible to accommodate the connections between mental and physical phenomena which Hellman and Thompson envisage, without insisting that they are identities. This argument will be revisited later in this chapter when Papineau's position on the determination of the social by the individualistic is discussed.

c. Finally, Nagel's third response to the objections raised against identity theories concerns the issue of the inherent subjectivity of mental states.

> "The feeling that physicalism leaves out of account the essential subjectivity of psychological states is the feeling that nowhere in the description of the state of a human body could there be room for a physical equivalent of the fact that *I* (or any self), and not just that body, am the subject of those states."
> [Ibid.:354]

His response to this is largely to defuse the objection by showing that it is certainly not an objection unique to physicalism. Rather it is one which has to be answered by all theories of the mind which construe psychological states as attributes of a substance. Consequently, it is of no great significance if physicalism cannot answer it, since most alternative theories fare equally badly.

I would agree that if the subjectivity of the mental is a problem for physicalism, then it is also a problem for other theories of the mind. But is it in fact such a problem?[5] To claim that there is a problem seems to beg the question against physicalism. It also seems to make an intensional fallacy: the fact that we can know incorrigibly that we are in a given mental state should not be taken as an argument against the claim that mental properties and events are identical with physical properties and events. Identity claims, even those involved in strict identity, only cover non-modal and non-intensional properties. But my subjective awareness of my mental states is surely intensional, in which case it does not create a problem. To take it as non-

intensional *i.e.* as objective in some sense, is certainly to prejudge the issue against any identity theory.

The subjectivity objection will not be considered further, since it has little direct bearing on the debate as applied to the relation between social and individualistic phenomena. The main difference between Nagel's physicalism and Hellman and Thompson's physicalist materialism thus appears to be that Nagel sanctions identities between mental and physical properties and events whereas Hellman and Thompson deny that physicalism depends on these. Hellman and Thompson thus provide substance to Nagel's version (iv) of physicalism. Moreover, Nagel insists that identities should hold in virtue of general laws established between the mental and physical, whereas Hellman and Thompson deny that psycho-physical laws are necessary to establish physicalism.

Ultimately in this thesis I intend to apply some such relation as is being considered here, to the relation between social and individualistic phenomena. In this domain, the existence of general socio-individualistic laws linking each social predicate or property to some individualistic predicate or disjunction of the same, looks extremely unlikely. Consequently, a position which required there to be laws would fail to be applicable from the outset. A position which did not rely on laws would be more attractive. This must count in favour of Hellman and Thompson's physicalist materialism and against Nagel's physicalism. Moreover, their position, in this respect, is broadly in favour with Davidson's position. However,

there is a significant difference between their respective positions: Hellman and Thompson do not rule out the possibility of such laws linking mental and physical phenomena, while Davidson does.

In this respect, for the following reason, Hellman and Thompson's position seems more plausible than Davidson's. Many human industries would appear to rely totally on the possibility, and indeed the instantiation, of psycho-physical laws. Consider, for example, the chef, the perfume-maker or the piano-tuner: Each relies on the evocation of specific mental states, admittedly phenomenal ones, through the performance of certain physical actions. This would surely rely on wildly implausible coincidences unless there were at least generalized conditionals known to hold between these mental and physical states. Admittedly it is considerably more difficult - perhaps impossible - to find examples of similar generalized conditionals between intensional mental states and physical ones.

Yet Davidson's anomalous monism is certainly intended to be generalizable to all mental states, both intensional and phenomenal:

> "In order to establish anomalous monism in full generality it would be sufficient to show that every mental event is cause or effect of some physical event; I shall not attempt this." [Davidson 1970:224]

So the above examples suggest that, while Davidson's monism nay be generalizable, the anomalism of it might not be. Hellman and Thompson's position is not open to this sort of criticism and for

this reason seems to be preferable. It is on this particular issue - whether or not laws linking the two levels of phenomena in a relation of determination can be provided - that Jaegwon Kim enters the debate.

Kim endorses the view that the possibility of psycho-physical laws between all mental states and some physical states cannot be ruled out. In the following passage, Kim is arguing specifically against Davidson, but effectively against any position which advocates physicalism without the existence of laws linking physical pheomena with non-physical phenomena:

> "Davidson's arguments for mental anomalism are geared specifically to *intentional mental attitudes*, such as beliefs, desires, hopes, and regrets, and appear to ignore altogether those mental events often called 'phenomenal' or 'phenomenological', namely raw feels, visual images, and the like. It seems to me that it is an important working assumption of those engaged in neurophysiological and neuropsychological research that there are lawlike correlations between sensory events and neural processes, and that the uncovering of these correlations is an extremely important goal of their research." [Kim 1979:34]

Kim goes even further than this, to question the reasonableness of asserting token-token identities between mental and physical events (intensional or phenomenal ones) without relying on any psycho-physical laws. His argument against law-independent token-token identities is the following: on what basis would it be decided that the projected physical instantiation of a mental event was the right one?

> "It is difficult to see how such neurophysiological descriptions can be chosen apart from our discovery of psychoneural correlations between phenomenal mental events, such as pains and tinglings, on the one hand, and certain underlying neural processes on the other.

> Moreover, it is difficult to see why such correlations should fail to be 'lawlike' in any relevant and appropriate sense of this expression. For they seem to be just the sort of empirical correlations that are subject to confirmation by observation of favorable instances, and that can support counterfactuals."
> [Ibid.:33-4]

Perhaps it is unfortunate that Kim's arguments are couched in terms of phenomenal identities, since for these it seems relatively easy to concede (*pace* Davidson) that there most probably are, or will be, psycho-physical laws. The more difficult case to prove must surely be the one for intensional mental states. Yet Kim's arguments can be directly applied to these as well. Davidson insists that token-token identities between intensional mental events and physical events can be established. But then, how could it be ascertained that the correct physical token had been correlated with the intensional mental token? Or, more generally, what are the criteria of token-token identity?

This is surely a serious criticism of Davidson's position and one which seems to undermine the very core of anomalous monism. Davidson, to my knowledge, does not defend himself here. However, before continuing to consider Kim's proposal for a solution to this dilemma, it should be noted that not all physicalist positions would be open to the same objection. As has been mentioned, Hellman and Thompson do not deny the possibility of laws linking the determined and determining levels of phenomena. Moreover, their Principles of Physical Exhaustion and Physical Determination provide formalised criteria for the relation between the phenomena in question. That they are not described as criteria of token-token identity simply

reflects the fact that Hellman and Thompson deny that the relation is one of identity.

But to return to Kim and his quest for identity criteria for token-token identity: he claims that all we have are lawlike psycho-physical correlations; we rely on psycho-physical laws for establishing physical correlates for both phenomenal and intensional mental states. However, this by no means solves all the problems. On the contrary, this raises new difficulties for physicalism in connection with psycho-physical causation. It is the discussion of these difficulties which will concern us for most of the rest of this chapter since it seems to be of crucial importance for any physicalist theory that it should be able to deal with them. Furthermore, a discussion of them can serve to highlight the defensibility or otherwise of Kim's position.

What then are the problems for physicalism that causal laws introduce? According to Kim there are three interrelated difficulties which arise in connection with psycho-physical causation. He calls these:

i) The problem of pre-emption,

ii) The problem of spurious overdetermination, and

iii) The problem of spurious partial cause.

More generally, (i), (ii) and (iii) are jointly referred to as the problem of nomological danglers. Consider the following example: the desire for chocolate (a mental event) causes X to reach out her

hand and grab some (a physical event). Let the mental event be M and the physical event, P. So M causes P. But, according to Kim's position, M is nomologically correlated with some physical event, say Q. M and Q are 'simultaneous nomic equivalents' [Ibid.:35]. We seem to be faced with a case in which M causes P *and* Q causes P simultaneously. The problem of pre-emption relates to the apparent pre-emption of M by Q as the cause of P. The precise example that Kim uses concerns pain causing the withdrawal of a limb. The pain, M, he argues, is correlated with some neural state, Q, which, in the light of our theories of neurophysiology, is more likely to be construed as the cause of the limb withdrawal, P. But then the pain appears to be pre-empted as the cause in this relation.

The second problem, that of spurious overdetermination, arises if both M and Q, the pain and its neural correlate, are construed as each being an individually sufficient cause of the limb withdrawal. In this case there would need to be two laws, (all causal relations are subsumed under general laws), one linking M and P and the other linking Q and P. Hence this is a case of dual causation and faces the immediate problem of why it is not an instance of causal overdetermination. Intuitively though, the limb withdrawal does not seem to be overdetermined.

Thirdly, there is the problem of spurious partial cause which arises when both M and Q are taken to be the cause of P. From this it follows that both are linked to P in accordance with laws. Thus it would not be physically possible to set up an experiment in which

P and only one of the causes was present. Hence there is no reason for denying that each event, M and Q, is only part of the cause, but that neither is sufficient on its own. But this too runs counter to our intuitions.

> "Thus, given that M and [Q] are simultaneous nomic equivalents, we need an explanation of why it is wrong to think of them as only necessary causes of the motion of the limb, rather than individually sufficient causes of it." [Ibid.:36]

These three problems can be summarised as follows:

> "If a mental event M has a simultaneous physiological equivalent, it becomes a dangling cause, dangling from its physical correlate, and its causal role is threatened. Given what we know of the essentially discontinuous nature of our mental life, there is an irresistible push toward accepting the physical correlate as the *real substantive cause* of whatever the mental event is initially thought to cause. The causal potency of the mental is in need of vindication." [Ibid.]

There are a few comments to be made on this issue of nomological danglers. Firstly it seems to be no accident that Kim's example for all three problems uses pain and its neuronal correlate. This is no doubt an area where neurophysiology is relatively well developed. Quite a lot is known about how the brain is affected by pain. Consequently, it is not unduly difficult to construe the neuronal correlate of pain as the cause of the limb withdrawal. However, consider again the example of the desire for chocolate causing X to reach out and grab some. In this case it would be far less intuitive to think of a neuronal state as pre-empting the desire in its causal role. This might be because, even if a neural state coextensive with the desire were to be discovered, we might still be doubtful of attributing causal powers to it in this example because

we lack a general theory of the neural states which underpinned states of desire. The problem of nomological danglers here is not so much eliminated as defused. Where there is a scientific theory which supports and possibly explains the correlations, we might be ready to accept that the more fundamental phenomena play the more basic causal role. Indeed it is more than likely that such a theory would convincingly endorse psycho-neural identities, thereby eliminating the problem of nomological danglers altogether.

So we are not unduly bothered to construe the neuronal state as pre-empting the pain because we are ready to accept the beginnings of a neurophysiological theory of pain, which identifies pain with certain neurophysiological states. We are less happy to think of a neural state pre-empting desire, primarily because we doubt the plausibility of a neurophysiological theory of desires or of intensional states more generally. In this respect, is Kim not wrong to concentrate his argument exclusively on the phenomenal case, since it seems unlikely that the intensional case will follow by the same reasoning? Moreover, it seems that intensional states are going to be the more recalcitrant, and consequently the more interesting, for any position of physicalism to incorporate. In connection with *these* mental states, my sympathies lie with Davidson and his denial of psycho-physical laws or more specifically with Hellman and Thompson who simply manage to do without them. Also, it has been pointed out above that Hellman and Thompson's position does indeed offer criteria for their relation, albeit not for identity.

Nagel too, in defending his position of physicalism, offers criteria for identity. Nagel's distinction between strict identities and theoretical identities - according to which the latter were established on the grounds of conditional attributes or causal potential - can be accepted as providing reasonable criteria for token-token identity. If it can be established empirically that certain mental states have the same causal role as some neural states, then the mental and neuronal states can be theoretically identified. The problem of nomological danglers could be solved in this way for him. The overdetermination would not arise as a problem since the two causes, mental and neural, would be correlated precisely on the grounds of satisfying the same causal role. Similarly, it would not be reasonable to construe one cause as pre-empting the other: rather they should be construed as dual manifestations of the same cause. Finally, no experiment could yield the effect preceded by one cause without the other because they were one and the same cause. They would be parts of a joint whole in a sense analogous to the one in which different descriptions of one thing may all be required for a fully comprehensive description of that thing.

We have seen that the problem which Kim sets out to resolve, while it is probably fatal for Davidson's position, is not equally damning for the other physicalist positions under consideration. Indeed Hellman and Thompson and Nagel offer their own resolution for their respective positions. For various reasons as discussed above, our sympathies have come down in favour of Hellman and Thompson.

Thus far, various attempts to characterise a position which defends the priority of the physical, without endorsing the reduction of all theories to physical theories, have been considered. Although the problems detailed in Chapter 1 ruled out the possibility of establishing type-type identities and hence the Condition of Connectability for reduction, the establishment of token-token identities, or something comparable in the case of Hellman and Thompson, seems to be plausible. Token-token identities would support a position of physicalism without reduction. Different versions of physicalism have been examined. In considering the token-token identities which these theories endorse, it has been discussed whether or not they rely on causal laws.

Kim has argued that, where there are no critera of token-token identity, all we can establish, on the basis of psycho-physical, causal laws, are simultaneous nomic equivalences between physical and non-physical states or properties. However this introduction of causal laws into the analysis raises problems which he attempts to resolve.

Kim's solution to the problems of pre-emption, overdetermination and partial cause is set out in far greater detail in his defense of supervenience as the relation between mental and physical phenomena, an account which

> "does not deprive the mental of its causal powers; it holds only that their causal powers are dependent on the causal powers of underlying physical processes." [Ibid.:48]

Some such resolution is mandatory before the discussion can move on to consider an individualistic analogue of the relation of physicalism which could be offered as a serious candidate for the relation between social theories and theories of individuals.

The remaining chapters of this thesis will consider supervenience in detail and its application to the social sciences in particular. Any doubts about token-token identity which remain will be dealt with there. Before concluding this chapter, though, and moving on to consider supervenience exclusively, it will be worth examining the work of some other philosophers who have considered the problem of nomological danglers, particularly in the form that most directly concerns us, *viz.* in the relation between social and individual phenomena. To do this most effectively, I wish to highlight an issue which has been touched on in passing in this chapter. It will have direct bearing on the discussion which follows.

This is the issue of the diversity of properties from the lower-level or determining theory *i.e.* physical properties in the physical-mental relation, individualistic properties in the individualistic-social relation. It will influence an assessment of the nomological dependence or independence of the two theories and the priority of one over the other. The suggestion that properties in the lower-level theory may be so diverse as to make it impossible for them to yield laws reflecting the laws of the higher-level theory has been emerging throughout this chapter. By drawing the threads together, their significance should become clearer.

Hellman and Thompson's position has featured prominently in this chapter. Their Principle of Physical Exhaustion is the first statement suggestive of diversity. This principle draws a distinction between objects which are in the extension of basic, physical predicates and basic physical objects. Hellman and Thompson claim that every entity can be characterised by a collection of physical predicates although it may not be characterised by one basic, physical predicate. The determining base here may be imagined as a vast collection of bits - the physical predicates - which are collected at particular times into all the different physical objects. In this respect, Hellman and Thompson's position is different from other physicalist positions. Furthermore it bears little resemblance to any scientific theory. Consequently it seems fairly safe to say that the physicalist base in their theory is unlikely to have its own laws. But perhaps this would have been too much to expect from such an unorthodox theory anyway. What though of the other theories which offer a rather more traditional approach to interpreting the lower level theory?

Consider Nagel's theory. His position centres around a claim for theoretical identities between the two levels of phenomena in question. These identities depend on the common possession of causal and conditional attributes and the causal relations reflecting this are instantiated in general laws. However, Nagel concedes that while a specific instantiation of two entities having common causal properties may follow from a general law, there may not always be a general law linking such specific higher- and lower-

level entities [Nagel 1965:348]. In particular, the connection between higher- and lower-level entities may be one-many, where one higher-level entity may be correlated with many different lower-level entities. This of itself is rather uncontroversial, but Nagel goes on to admit that in some instances, the one-many connections may not hold in virtue of general laws at all. This is the more interesting case for our purposes.

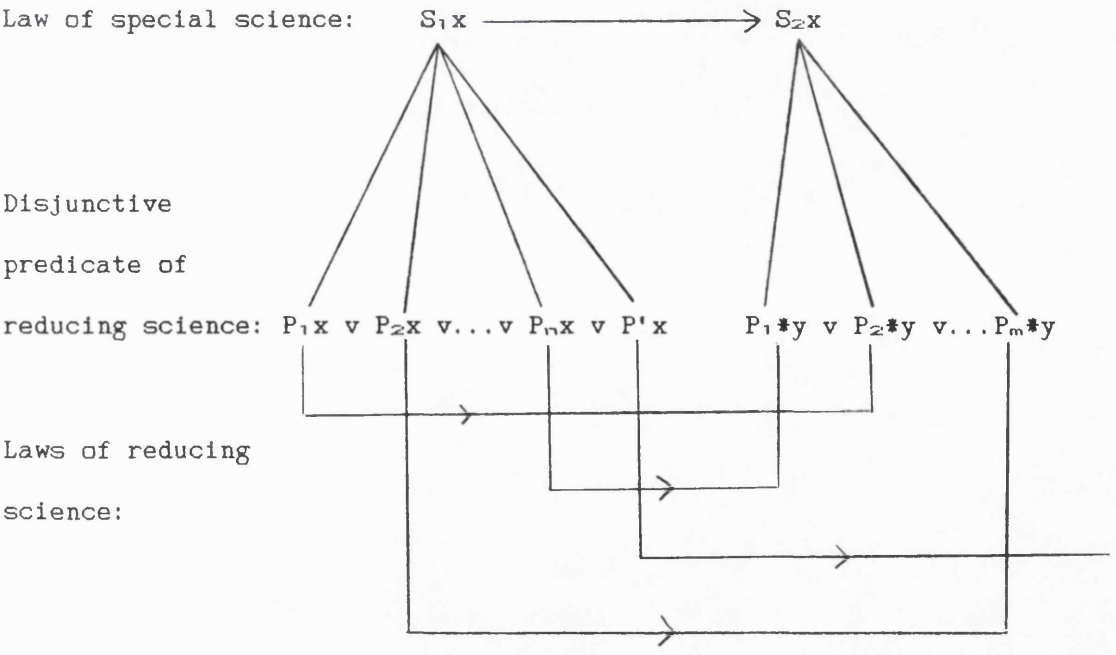
Nagel describes a relation of "...consists of..." which sometimes holds between the entities of two levels of phenomena. It too is an asymmetrical, one-many relation but it does not hold by virtue of a general law. This is because the lower-level disjuncts are simply too diverse and possibly also too numerous to fall under any general law as a unique entity. While Nagel's position here seems intuitively plausible, it lacks any rigorous argument to support it. If our intention is ultimately to claim that such a relation obtains between social and individualistic phenomena, thereby denying claims about general laws between them, or denying the existence of individualistic laws mirroring social laws, then some stronger argument in favour of the position will be required. Fortunately I believe that it has been provided by Jerry Fodor.

Like Nagel, Fodor argues for identities between the higher- and lower-level of phenomena. Thus, where S is a predicate relating to a kind in the higher-level science, say psychology, and P is a predicate in the lower-level science, say neurology, he claims that

> every event which consists of x's satisfying S is identical with some event which consists of x's

satisfying some or other predicate belonging to the disjunction $P_1 \vee P_2 \vee \ldots \vee P_n$." [Fodor 1981:139]

Yet Fodor denies that a natural kind at the higher level will always be correlated with a natural kind at the lower level. Alternatively there may be instances where there is a correlation but it is not nomological. This is very close to a restatement of Nagel's relation of "...consists of...". However, Fodor does show how predicates in such a relation fare when the nomological issue is confronted. Diagrammatically, Fodor has represented his position in the following way [Ibid.]:



Although the diagram refers to reduction, Fodor is actually attempting to capture a relation of token physicalism which is much weaker than reduction as considered in Chapter 1 and more in keeping

with the positions discussed in this chapter. Fodor accepts the possibility that the reducing level may comprise

> "a heterogeneous and unsystematic disjunction of predicates"[Ibid.:138].

These are not kind predicates in so far as the reducing disjunction here is not a natural kind. Consequently, the links between the two sciences, the 'bridge laws', cannot in fact be laws. At best they can be true empirical generalizations, since

> "a necessary condition on a universal generalization being lawlike is that the predicates which constitute its antecedent and consequent should be kind predicates." [Ibid.:139]

I propose to accept this condition on laws in order to concentrate on what follows from it.[6] What the figure shows is that laws of the higher-level theory are connected to a disjunctive antecedent and a disjunctive consequent at the lower-level theory by bridge laws which do not actually have all the characteristics of laws. Yet each specific antecedent and consequent are lawfully related, barring exceptions. However this does not entail that the whole disjunction of antecedents is lawfully related to the whole disjunction of consequents. The two disjunctions do not reflect natural kinds of the lower level theory. From the figure we have the following logical statements for each antecedent- and consequent-disjunct, excluding the given exception, P'x:

1) $P_1x \rightarrow P_2{*}y$

2) $P_2x \rightarrow P_m{*}y$

...

3) $P_n \rightarrow P_1 *y$

The question then is whether or not the following holds in virtue of the above:-

4) $(P_1 \vee P_2 x \vee \ldots \vee P_n x) \rightarrow (P_1 *y \vee P_2 *y \vee \ldots \vee P_m *y)$

Fodor shows that is does not, providing it is granted that 'it is a law that...' marks a truth-functional context.

1) has the form $A \rightarrow X$

2) has the form $B \rightarrow Y$

4) has the form $(A \vee B) \rightarrow (X \vee Y)$

From (1) and (2) we have $[(A \rightarrow X) \& (B \rightarrow Y)]$

But $[(A \rightarrow X) \& (B \rightarrow Y)] \not\equiv [(A \vee B) \rightarrow (X \vee Y)]$

To make the point, consider the following analogy:

1') If inflation begins to fall then the Chancellor will lower interest rates.

2') If war breaks out in the Gulf then oil prices will soar.

4') If inflation begins to fall or if war breaks out in the Gulf then the Chancellor will lower interest rates or oil prices will soar.

(4') does not follow from (1') and (2') because (4') allows for the possibility that either inflation and oil prices could be directly related, or war in the gulf and interest rates. But neither of these claims follows from (1') and (2').

The result of all this is that there may be true empirical generalizations identifying higher-level phenomena with disjunctions of lower-level phenomena without these generalizations being laws. In addition, the lower-level phenomena may not represent natural kinds or types in the way that the higher-level phenomena do. Consequently the full disjunctions at the lower level will not feature in the scientific laws of the lower-level theory. Fodor's argument here is appealing and helps to add credence to the claims of Hellman and Thompson and Nagel that there may not be laws linking higher- and lower-level theories on the basis of the diversity of predicates at the lower-level. This argument will be used in the discussion of the relation between social and individualistic levels of phenomena.

Let us now return to the main thread of the chapter in which Kim's resolution to the problem of nomological danglers was considered. Before interrupting to discuss the issue of diversity, we were about to examine how the issue of nomological danglers had been considered in the context of the relation between social and individualistic phenomena.

The issue has been discussed in connection with prediction by David Papineau [Papineau 1985]. Davidson notwithstanding, Papineau supposes that we have some laws in the special sciences on the basis of which it is possible to make predictions. If we accept some version of physicalism or materialism with the attendant correlations between the social and the individualistic, then there

must be bridge laws of some description connecting the social antecedent and the social consequent of any social law with individualistic phenomena.

These bridge laws will only link social and individualistic types of phenomena as laws if the social is reducible to the individualistic. If we have token-token identity instead of reduction, as in the versions of physicalism discussed above in connection with Hellman and Thompson, Nagel and Fodor, then the bridge laws will be considerably weaker. In particular, in view of the possibility of variable realizability, bridge statements have to be allowed which link social phenomena with a long disjunction of individualistic tokens, or link a mental event with a long disjunction of physical events. In these cases, the disjunction may not necessarily pick out a psychological or physical type. In Fodor's terminology, it is not a kind predicate in the reducing science. From this, Fodor has argued that the lower-level disjunctions are too heterogeneous to feature in any general law at the lower-level.

Papineau's problem with the above schema is that if the social consequent can be predicted on the basis of a social law, then it would appear to be overdetermined. It is determined at the social level, in accordance with the social law, by its social antecedent. Yet it is simultaneously determined at the psychological level by the psychological antecedent which is linked to its psychological consequent. But this consequent is in turn linked by the bridge

statements to the social consequent. The trouble here is not so much the overdetermination *per se*, but rather the enormous coincidence that, at two distinct levels, the antecedents determine exactly the *same* social consequent.

In the case of reduction, the coincidence would not be remarkable, since the social and psychological outcomes, being strictly identical in virtue of nomologically necessary bridge laws, would be legitimately constrained. The question that Papineau wants to raise is: In the token-token identity case, what constrains the psychological outcome so that it always turns out to be identical, with the social outcome? The much-weakened, disjunctive, bridge statements cannot be relied upon to achieve this, since the psychological outcomes which they link to the social outcome in question, may be so diverse as not to represent a unified *kind* of psychological state.

This problem hinges on some crucial presuppositions about laws and predictions in the special sciences which it will be helpful to make explicit here. It has been assumed that social types and tokens (phenomena, events, properties) feature as the antecedents and consequents in social laws. Similar laws are taken to hold between psychological events *etc.* at the psychological level. But are we justified in assuming that there are laws in the special sciences, linking social phenomena or psychological phenomena in virtue of their causal roles and potential?

Davidson would deny that we are, since he claims that

> "there are no strict deterministic laws on the basis of which mental events can be predicted and explained." [Davidson 1970:208]

It seems reasonable to assume that he would wish to endorse a principle at least equivalently strong for social events. Davidson does not wish to infer from this that mental (and social) events never feature in causal relations which are subsumed under causal laws. On the contrary, they clearly do. But they do this in virtue of their inclusion under physical laws and their description as such as physical events.

As has been seen in the case of mental phenomena, this position seems too strong to be attractive: there do seem to be some instances of social regularities at least, on the basis of which social events can be predicted or explained. For example, during periods of unemployment, union membership shows a decrease. This has been corroborated in the 1930's, late 1970's and 1980's. Papineau concedes that we do have a certain degree of predictability at the social level:

> "I realize there are those... who deny that we have any such [predictive] abilities. They seem to me clearly mistaken. After all, the claim is not that we can *always* predict, merely that we *sometimes* can, as when it is completely obvious what someone will do, or inevitable that certain social consequences will ensue." [Papineau 1985:60]

Notwithstanding this, Papineau is influenced by Davidson's position when he writes:

> "Most crucially, it is held that the laws sustaining causal relations between mental events and their various causes and effects are ones which apply in virtue of the physical descriptions of those events:

> it is their *physical*, not their mental, properties which give mental events their causal powers."
> [Ibid.:58]

Fodor's position on laws has a certain amount in common with this. Fodor assumes that the special sciences are specifically concerned to establish empirical generalizations which support counterfactuals. Sometimes these are referred to as 'laws' - Fodor cites the example of Gresham's law - but it must be remembered that they will often admit of exceptions. These generalizations or laws are intended to support predictions ("Gresham's law says something about what will happen in monetary exchanges under certain conditions"). However, Fodor also concedes that

> "any event which consists of a monetary exchange (hence any event which falls under Gresham's law) has a true description in the vocabulary of physics and in virtue of which it falls under the laws of physics."
> [Fodor 1981:133-34]

But we have seen that he goes on to claim that a social event of this kind will be identical with a whole range of physical events *i.e.* with a widely disjunctive physical event. This may not describe a physical kind (or type) and so the whole physical disjunction itself will not feature in a physical law. Each particular physical instantiation may, however, feature in a physical law, linked with the particular physical instantiation of the social consequent.

It seems reasonable to accept that there are at least some social generalizations and that in some cases we do rely on them for making predictions. Their precise relation to the laws of physics *will*, though, prove to be significant.

The original problem of overdetermination is thus to explain the coincidence that the consequent of a social generalization is determined both socially and psychologically, and to establish what restricts the variable realizations at the psychological level to just those which are correlated with the social consequent determined or predicted by the social antecedent. Denying that there are any constraints on the psychological level would be tantamount to denying the token-token identity thesis and consequently to denying that we do in fact have any individualistic grounding for social events.

At the other extreme, it might be argued that what the lower-level realizations have in common is just some characteristic which is describable purely in the vocabulary of the lower level. For instance, in the standard example of temperature and mean kinetic energy, molecular samples which manifest the same temperature all have the same mean kinetic energy, a micro-property. It is important here that the micro-property does not make tacit reference back to the macro-property in question. For instance, in different individualistic instantiations of, say, the sale of real estate, the common psychological property could not be that all the individuals involved believed that they were selling real estate. However, if there is a genuine micro-property common to all the variable realizations, then surely this justifies the claim that events of the social type are being identified with events of the psychological type characterised by that psychological property which each realization satisfies. This, however, would amount to an

argument for reduction. In the case of temperature and mean kinetic energy this is exactly what we would expect.

If we are looking to defend token-token identity and combine this with predictability, then some compromise between the two positions just outlined will be required. Maybe the weaker option, rejected when considering type-type identity, is worth pursuing. According to this, the psychological realizations of a social event are not left completely unrestricted, despite their not having any *psychological* characteristic in common. What they *do* have in common is precisely that they give rise to, or determine, the social event that we would have predicted. In the mind-brain debate, this is the position of functionalism according to which,

> "to ascribe a given mental state to someone is to say that they are in some physical state with the relevant causal role." [Papineau 1985:62]

Presumably in the context of socio-individualistic relations, this would be equivalent to the claim that to ascribe a given social state to a configuration of individuals is to say, minimally, that they are each in some psychological state with the relevant causal role. This psychological state will often be a belief state which will make ineliminable reference to the social event in question, as when it is a belief about the social event.

However, Papineau does not consider this to be a satisfactory way of solving the overdetermination of predictions in the special sciences. He argues that functionalism does not so much explain the coincidence of the macro- and micro-consequent as sweep it under the

carpet. We are still left with the problem of finding what it is that constrains the micro-level to have the particular causal role that it does and in virtue of which it is selected. Another option would be to treat the constraint as a matter of definition. On this reading, in the mind-brain case, the neuro-physiological instantiation would be a realization of the mental state in virtue of the fact that it satisfies a certain causal role *viz.* that causal role without which it would not count as a realization of that mental state. To be in a mental state of that kind is just to be in a physical state which has the relevant causal role. Realizing the mental state is thus part of the definition of the physical state correlated with it.

This is not satisfactory, though, as it rules out the very prediction which it was supposed to be reconciling with variable realizability. In particular,

> "the definitional reading leaves it open that in order to identify someone's mental state one would need to attend its overall causal role, to check that it has the right overall structure of cause and effects. But if that were necessary then of course there would be no mental predicting, for we would need to know that certain effects occurred before we knew that we had a given mental state." [Ibid.:64]

Papineau's solution to the above is to give up the definitional approach and turn to the constraints of natural selection to cover the mind-brain case: genetic plans selected during the evolutionary process, he argues, will be those with appropriate arrangements of molecules to establish the right structural connections between sensory inputs and behavioural outputs. This is an interesting way

of resolving the situation, but I do not intend to comment further on it here. What is germane to my purposes is the solution Papineau offers to the same problem in the social-individualistic case. Here, evolution is of no help in explaining how it is that different individual, psychological states which are identified on different occasions with a particular social state, should all coincide in producing the same results.

> "Different societies aren't given genetic programmes by some process of natural selection to ensure that despite their heterogeneity at the level of individual psychology they will be causally similar at the macro-level." [Ibid.:69]

Indeed not. Yet on occasion we can predict the outcome of a social event. So the only available option, Papineau insists, is to concede that the psychological states variably realized by the social state *do* reflect a uniform type or kind, such as would feature in a psychological generalization to predict uniform results. This amounts to the claim that social kinds can be identified with individualistic kinds and hence that the social is reducible to the individualistic.

I would accept that we do have some social generalizations and that on the basis of them, we are able to predict. Unless there is more to say, the overdetermination of the social consequent would appear to be a startling coincidence. However, I wish to resist Papineau's adoption of the reducibility of the social by showing that his 'only available option' is neither the only, nor perhaps the best, one.

It will be remembered that Papineau ruled out the possibility of the psychological states which instantiate a social state on a particular occasion being restricted by definition *i.e.* being defined as those which bring about the desired results or satisfy the required causal role. In the mind-brain relation this may be justified on the grounds that it is circular whereas other available options, notably that provided by a naturalised solution, are not. Yet this solution does seem to have a valid application in the social-individualistic case. Consider, for example, a social phenomenon such as marriage. It could be argued that the instantiation of such a social phenomenon often does involve, among other things, the presence of certain individuals who have beliefs about what they are doing which are, in one way or another, beliefs about marriage. For instance, on the occasion of a conventional marriage in Western society, there has to be someone who at least believes he is performing the marriage, two people who believe that they are being married and two more who believe that they are witnessing a marriage. Other conditions may have to be fulfilled in addition (for instance paying a certain fee), but the having of these beliefs about marriage is a necessary condition. Without these individualistic states, the social event would not have occurred *i.e.* there would have been no marriage.

Yet this does not imply that there is no predictability. There are many other characteristics of marriage which might feature in social generalizations. For instance, it might be a generalization that the rate of marital separation is lower in societies where

marriages are arranged by the community than in those where they are decided on by the couple to be married. It is only a subset of all the characteristics of marriage which affect whether or not a particular event is or is not a marriage. If the above social generalization were true, it would be reasonable to predict, (although dangerous, no doubt, to make predictions about specific events on the basis of a statement of probability,) that of two marriages entered into in Northern India by arrangement and in Britain by mutual consent respectively, the former had a greater chance than the latter of remaining intact.

The predictability of a social state of affairs or social event thus does not depend on the possibility of characterising the state exclusively individualistically. The fact that the individualistic instantiation may make ineliminable reference to social phenomena, as when the people involved in a marriage are characterised by their belief that what they are involved in is a marriage, appears to have no direct bearing on whether or not claims about marriage may be predicted on the basis of social generalisations or laws. All that does follow from this is that the social is not reducible to the individualistic. But that claim has been tacitly endorsed throughout this chapter. Of course, this still leaves the coincidence of the social and individualistic events predicted to be explained. It is at this point that we need to invoke the arguments considered earlier on the variable realizability of the lower-level properties in such a relation.

Not all individualistic instantiations of social phenomena will be characterised by individuals having beliefs about the social phenomena in question. There are others which may even be correlated on occasions with the refusal of the individuals instantiating them to believe at first that this is what they are doing. It is possible to imagine, for istance, that this may be true of a bear market. It is for types of social phenomena such as these that Fodor's potentially lengthy disjunctions of individualistic predicates seem the most plausible candidates for their instantiation. I would agree, especially in this case, that the disjunctive predicates would *not* constitute a natural psychological kind, or a specific type of psychological/individualistic phenomenon. So where the former kind of social phenomenon might have had some property in common to all individuals instantiating it, *viz.* their beliefs about marriage, the individuals involved in the instantiation of a bear market may have no single, individualistic property common to all of them.

In this case, it seems most reasonable to take a different line in explaining how it is that the social event predicted coincides with the individualistic event predicted. My sympathies are with Fodor here and in particular with his denial that the whole disjunctions of predicates or properties at the individualistic level are the sorts of entities which feature in individualistic laws. Thus there is no individualistic law which mirrors the social law in this example. To this extent then, there is no overdetermination or coincidence of the predicted event.

This should by no means be taken to imply that there are no generalizations at the individualistic level. On the contrary, at the individualistic level, it is true that the individualistic disjuncts of the antecedent may be linked with disjuncts of the consequent and these links may be lawlike. Rather the point at issue is that in the lower-level science, the generalizations do not parallel the generalizations at the social level. Indeed, why should it ever have been assumed that they would unless the argument for reduction was being presupposed? The social type in the example used above, a bear market, involved, let us imagine, in some social generalization, need not correspond to any psychological type involved in psychological generalizations.

Moreover, there is one significant advantage for this construal over Papineau's reductive solution. It allows for the possibility of exceptions to the social generalizations, whereas if the social antecedent and consequent are reducible to individualistic consequents and antecedents which in turn are linked by individualistic laws, it would not be possible to accommodate any social antecedents which did not in fact lead to the expected social consequent. But surely such irregularities have to be admitted in the social sciences. Where the whole disjunction of antecedents and disjunction of consequents at the individualistic level are not linked by law, such exceptions would not be a problem. It seems at least prudent to allow that such social generalizations as there may be, might admit of exceptions.

In summary, I would make the following points: Firstly, I am not convinced that the problem being considered is most appositely described as a problem about *prediction* in the special sciences. It does not seem to be particularly problematic that the same effect can be predicted on the basis of different generalizations as following from different causes *i.e.* the fact that it is a social and an individualistic *prediction* which coincide does not seem especially contentious. In the natural sciences it is often considered an advantage if a particular observational result can be predicted by different means.

Rather, in the social-individualistic case, it seems to be the coincidence or overdetermination of the consequent which is problematic. If this is the case, then what has been discussed here bears a very close resemblance to Kim's problem of nomological danglers. In particular, Papineau's problem is the problem of spurious overdetermination. His solution, though, is not the same as Kim's: where Kim opts for supervenience, Papineau opts for reduction.

I would like to suggest that the solution that one favours to the problems of causation in the special sciences will depend largely on the position one adopts with regard to laws in the special sciences. Davidson, who denies that there are such laws, faces none of these problems. Yet as Kim has shown, a position without laws must deal with its own difficulties. Furthermore, it seems unreasonable to insist that the social sciences have no laws

or generalizations because so often we seem to use them to predict and explain events. However, the status of these laws must be accepted for the most part to be considerably weaker than their counterparts in the natural sciences. The fact that they admit of exceptions has already featured in the discussion.

In many cases, it seems unlikely that the social phenomena featuring in social generalizations will have individualistic correlates which are themselves individualistic types. As Fodor has suggested, the individualistic correlates will be heterogeneous disjunctions. Furthermore, he has argued that such disjunctions will not feature in individualistic generalizations. Each individualistic disjunct from the antecedent may be linked by a generalization with an individualistic disjunct from the consequent. Yet the disjunction of antecedents will *not* be linked by a generalization to the disjunction of consequents.

In these cases, the overdetermination problem is vitiated: causal relations require laws or generalizations, but the individualistic phenomena under consideration, *i.e.* the composite individualistic disjunctions do not fall under any. Therefore it must be concluded that the disjunctive individualistic consequent is not actually caused by its disjunctive individualistic antecedent. The causation takes place at the social level where there are generalizations linking antecedent and consequent. Of course, particular individualistic disjuncts from the individualistic antecedent may be linked by generalizations to particular

individualistic disjuncts from the individualistic consequent. The point is only that these generalizations will not provide the basis on which to predict the whole, disjunctive, individualistic consequent. These generalizations therefore do not parallel the social ones.

There may be other instances in which the individualistic disjunctions will not be equally heterogeneous. In particular, the case where each disjunct had a certain belief state in common has been considered above. Do we not have a case of overdetermination here? Again I think not, although here I would offer a different reason. This was raised previously in connection with Kim's position on pre-emption where it was noted that when Kim offered examples of mental and physical correlates, he concentrated on phenomenal mental states *eg.* pain states, at the expense of intensional mental states, *eg.* states of desire. In the case of pain, we might be happy to accept that it is in fact the brain state which causes the action of withdrawal *i.e.* we accept that the neuronal state pre-empts the pain. It was suggested that this was because our neurophysiological theories of mental states such as pain, which identify pain with certain neurophysiological states, are fairly advanced.

By contrast, theories about intensional states such as beliefs and desires seem far less advanced. Consequently, we would be far less likely to accept that generalizations about desires could pre-empt the action. Indeed it seems unlikely that there will be

individualistic generalizations about desires on the basis of which the individualistic outcome can be predicted. Even if bridge laws linking desires to actions can be formulated, it is most unlikely that the disjunctions of desires will themselves form generalizations. So here too the problem of overdetermination fails to arise, since the lack of any true, empirical individualistic generalizations about desire entails that there is no determination at the individualistic level.[7]

Have we perhaps been considering a quasi problem altogether? I think the problem of overdetermination does arise seriously for some of the more quantitative social sciences such as economics. To take an example, it seems plausible that both unemployment and union membership could be characterised exhaustively in purely individualistic terms. Let us assume moreover that economics is able to provide generalizations about the behaviour of individuals who are unemployed and/or union members. In other words, economics is able to produce individualistic generalizations underpinning the social generalizations of union membership and unemployment. If this is so, then the social generalization that union membership falls in times of unemployment *would* seem to provide a case of overdetermination.

In such cases, I would not hesitate to assert that the real causation is present at the individualistic and not at the social level. I would argue that the level of unemployment is completely determined by the number of people who are out of work. Likewise,

union membership just is the number of people who are members of a union. I would vehemently deny that unemployment or union membership is anything over and above people being out of work and people being members of unions respectively. (Whether or not work and unions can be characterised individualistically is not at issue, since reduction is not being defended.) Consequently I would deny that there is any causation present at the social level that is not exhaustively captured at the individualistic level. In this respect, these cases seem directly to parallel the mental-physical cases involving phenomenal mental states. We were happy to rely on advanced neurophysiological theories to explain the causal relations present there. In the same way, we should be prepared to rely on economic theories where they offer to explain social phenomena individualistically.

In conclusion, the problem of causal overdetermination should not be taken to undermine the position of physicalism, nor the position that social phenomena are determined individualistically. In this chapter, different positions which defend the priority of the physical (or individualistic) over the mental (or social) have been analysed. It has emerged that there is the genuine possibility of defending such a position, notwithstanding certain difficulties, such as the problem of nomological danglers. In the chapters which follow, one particular way in which this position can be specified will be developed in detail. Subsequently it will be applied to the relation between social and individualistic phenomena. This position is supervenience.

CHAPTER 3

SUPERVENIENCE I: FORMULATION

Reduction is one possible way that the relation between social and individualistic theories might be captured. Yet we have seen that theories of social phenomena and theories of individualistic phenomena fail to fulfil the criteria for reduction. Specifically, arguments have been put forward to the effect that certain types of social entities and properties cannot be identified with any type of individualistic entities or properties. From this it follows that the Condition of Connectability for reduction fails to be fulfilled. Furthermore, if the entities and the properties of social theories cannot be individualistically identified, then it is unlikely that all the laws in a social theory - featuring social entities and properties - will ever be deducible from the laws governing individualistic entities and properties. If this is the case, then the Condition of Derivability for reduction would fail to be fulfilled as well. Thus the central claims that follow from reduction will have to be relinquished.

Given that social theories are not reducible to individualistic theories, there are two possible alternatives to consider. Either theories of social and individualistic phenomena are totally distinct from and independent of each other, or, although not reducible, they are related by some other relation, weaker than reduction, but which still

captures some form of dependence of the social on the individualistic. Varieties of this relation were considered in Chapter 2. It is one particular version of such potential relations that will be examined in detail in this chapter, *viz.* the relation of supervenience.

There is little philosophically new about supervenience as a characterisation of the relation between two domains of phenomena which appear *prima facie* to be distinct although not entirely unrelated. The idea of a relation of supervenience may be found in writings on moral theory, where moral properties are taken to supervene on naturalistic ones. This is so implicitly in G.E. Moore [Moore 1922:261] and explicitly in R.M. Hare [Hare 1952:145]. It is also to be found in work on aesthetics, where aesthetic properties have been taken to supervene on physical properties [*e.g.* Sibley 1959 and Levinson 1983].

More recently, though, supervenience has been introduced into the mind-body debate by Donald Davidson [Davidson 1970]. In this seminal paper, Davidson has developed a position on the relation between mental phenomena and physical phenomena, known as anomalous monism. Central to this position is Davidson's classic statement of supervenience:

> "Although the position I describe denies there are any psychological laws, it is consistent with the view that mental characteristics are in some sense dependent, or supervenient, on physical characteristics. Such supervenience might be taken to mean that there cannot be two events alike in all physical respects but differing in some mental respect, or that an object cannot alter in some mental respect without altering in some physical respect." [Ibid.:214]

This has prompted many philosophers to defend a position of supervenience in the mind-body debate [*e.g.* Kim 1978, Haugeland 1982, Teller 1983a]. Although the relation between the mental and the physical is not my primary concern here, there are at least certain respects in which it is parallelled by the relation between social and individualistic phenomena and Davidson's ideas have certainly been influential and inspirational in recent philosophical literature on the holist-individualist debate [Macdonald and Pettit 1981 and Currie 1984]. The application of supervenience to this debate *is* rather novel and this will be my ultimate concern. What I propose to do in this chapter is to look, in some detail, at the formulation of supervenience and assess its plausibility.

Davidson's statement of supervenience is suggestive, rather than explicit. It describes a relation between the characteristics of two domains, where there are no laws linking these domains (*i.e.* no psycho-physical laws in this case), yet where the characteristics of the supervenient domain (mental characteristics) are dependent on the supervenience-base (physical) characteristics. The only elaboration Davidson gives about the nature or extent of this determination is that two events alike in respect of their base characteristics will be alike in their supervenience characteristics and any change in the latter will always be accompanied by some change in the former, although what change this might be, is not determined by any law.

Davidson proposes supervenience as a relation between characteristics. However, it should be noted that for Davidson, mental

and physical characteristics are the things responsible for individuating mental and physical events, respectively. For other philosophers, this role is most often filled by properties and indeed, perhaps this is all that Davidson means by 'characteristics'. In the light of this, it is not surprising to find an alternative formulation of supervenience couched in terms of properties:

> "One family of properties is 'supervenient' upon another family of properties in the sense that two things alike with respect to the second must be alike with respect to the first." [Kim 1978:149]

Taking the relata of supervenience to be properties seems plausible, particularly as it yields easy interpretation of Davidson's claim for the determination of one domain of phenomena by another which is central to supervenience. The claim that there can be no change in the supervenient level without some change in the supervenience base can be reparsed in terms of properties as the claim that nothing can alter with regard to its supervenient properties without simultaneously altering with regard to its supervenience-base properties.

It is necessary for the changes to be simultaneous in order for the determinative nature of supervenience to carry any weight at all. For any change in an object with regard to one domain of its properties, some change at some time in another domain of its properties may be found and trivially correlated with the former change. But such a correlation would be fortuitous and there would be no justification for the claim that the former change could not have occurred without the latter. Consequently, on the basis of such a correlation between changes in properties, a determinative relation between the two domains

of properties in question could not be established. As a minimum, the changes must be simultaneous in order to fulfil Davidson's stipulation that an object *cannot* alter in respect of its supervenient properties without altering in respect of its supervenience base properties. Simultaneity is necessary, but insufficient. Most probably, there will be additional conditions to be fulfilled once the determinative nature of supervenience has been formally characterised. Any detailed analysis of supervenience will have to attempt to formalise something like Davidson's intuitively plausible criterion of determination more precisely.

In Davidson's characterisation of supervenience, the supervenience relation is between the mental and physical characteristics *of a person*. The domain of the relation is thus individual people. This is also the case for the formal characterisation of supervenience offered by Kim. In what follows, I propose to reconstruct Kim's characterisation as far as possible and then try to evaluate it.

Kim has cited the motivation behind a consideration of supervenience as follows:

> "...the main point of the talk of supervenience is to have a relationship of dependence or determination between two families of properties without property-to-property connections between the families." [Ibid.:150]

Subsequently though, Kim is forced to admit that,

> "...supervenience as defined does not fulfil its promise: it falls short of being a determinative relationship between properties *without requiring correlations between them*." [Ibid.:154]

In a later paper, supervenience is motivated slightly differently as,

"...an attractive alternative [for] philosophers who, while rejecting a straightforward physicalist reduction of the mental, want to acknowledge the primacy of the physical over the mental." [Kim 1984:45]

This is very close to the spirit of Davidson's statement and similarly in need of a more explicit formulation. It is the attempt to do this which will throw into relief the tension between a determinative relation and one which does not depend on property-to-property correlations. It will become apparent that Kim is ultimately prepared to give up the latter claim.

Kim has formulated two versions of supervenience which differ with regard to the determinative strength of the relation they encapsulate. The first, weak supervenience, henceforth W.Sv, does without property-to-property correlations, but Kim rejects it on the grounds that it does not capture the full force of a determinative relation. This position is then strengthened to produce strong supervenience, henceforth S.Sv, which has greater determinative strength, but achieves this only at the cost of introducing necessary correlations between properties. Kim's formulations of W.Sv and S.Sv are the following:

1) "A *weakly supervenes* on B just in case necessarily for any x and y if x and y share all properties in B then x and y share all properties in A - that is, necessarily if x and y are indiscernible in B, they are indiscernible in A." [Ibid.:46]

This, Kim claims, is provably equivalent to:

2) "A *weakly supervenes* on B just in case necessarily for any property F in A if an object x has F, then there exists a property G in B such that x has G, and if any y has G it has F." [Ibid.:48]

By contrast,

3) "A *strongly supervenes* on B just in case necessarily for each x and each property F in A, if x has F, then there exists a property G in B such that x has G, and *necessarily* if any y has G it has F." [Ibid.:49]

In the light of the above formulations, the following are also held to be true for weak and strong supervenience:

4) "If A weakly supervenes on B, then for each property G in A, there is a property H in B which is *de facto* coextensive with G. That is, this G-H correlation will not in general be stable across possible worlds." [Ibid.]

5) "If A strongly supervenes on B, then for each property G in A there is a property H in B such that G and H are *necessarily* coextensive - that is, the biconditional $(\forall x)[G(x) \leftrightarrow H(x)]$ is necessarily true." [Ibid.]

In the evaluation of the formulations (1) to (5) that follows, it will be considered why Kim finds it necessary to strengthen the characterisation of supervenience to S.Sv.

A and B are families of properties: the supervenient family and the supervenience base family, respectively. In the supervenience base, B, Kim constructs a B-maximal property, (called G in (2) and (3), H in (4) and (5) above), which is the base property to be correlated with the supervenient property in A. The B-maximal property is a construction of the conjunction of all the base properties that an object x in the domain has and the complements of all the properties x lacks.[1] Kim admits that this conjunction may have to be infinite if there are infinitely many properties in the supervenience base. Thus, two people, x and y, share all their properties in B iff x and y have the same B-maximal property. A disjunction of the above B-maximal properties can then always be constructed to be *coextensive* with each

supervenient property. The disjunction of maximal properties may likewise be infinite, if the supervenience base is infinite.

The formulations of W.Sv in (1) and (2) represent an attempt to capture Davidson's claim that "there cannot be two events alike in all physical respects but differing in some mental respect" (quoted above). Kim purposefully leaves the status of his modal operators undetermined, intending that they be specified only once the particular domains of phenomena that supervenience is taken to relate are fixed. Presumably, Kim's use of 'necessarily' here is intended to capture the force of Davidson's 'cannot'. But all the proposed formulations of W.Sv are found to be unsatisfactory, since they are too weak to capture adequately the modal force implicit in Davidson's intuitive characterisation of supervenience.

The following case is levelled against them: whether it is the supervenient property, F, or F's complement, which is coextensive with the B-maximal property, G, depends on the particular instantiation of supervenient and base properties in this (or some other) particular world. Even if G is correlated with F in this world, it could well be correlated with F's complement in another. There could also be other possible worlds in which, despite the distribution of base properties being the same as that in this world, everything had F or, alternatively, nothing had F. This, claims Kim,

> "makes supervenience too weak for some of its typical applications". [Ibid.:48]

Presumably, the 'typical applications' referred to here are those in Davidson's statement. In order to formulate supervenience in such a way that it can cope with these applications, Kim introduces his versions of S.Sv. Before considering these, I want to suggest an additional difficulty for Kim's formulation of W.Sv.

The use of 'necessarily' in formulations (1) and (2) seems to serve no purpose at all. It has been employed, I suggested above, to capture the idea that the supervenient properties *cannot* alter without some alteration in the base properties. However, it must fail to achieve this, since both the supervenient and the base properties fall within its scope. So all W.Sv as formulated above states, is that if A weakly supervenes on B in this world, then it does so in all worlds, where 'weakly supervenes on' merely amounts to the claim that the supervenient property is correlated with some maximal base property which is a construct of whatever base properties the object happens to have in the particular world in question. This makes the thesis of W.Sv trivial for two reasons:

i) it is not so much the case that W.Sv lacks modal force, as that the scope which the modal operator has been given is inappropriate, and

ii) the artificiality of the maximal base properties ensures that they can always be manufactured in the supervenience relation, from whatever base properties the object happens to have or lack in any particular possible world. To suppose that such artificial properties could play any role in *determining* the supervenient properties seems implausible when it is remembered that the former have merely been

constructed artificially. Further difficulties with the construction of Kim's maximal properties will be raised in the discussion of S.Sv.

Notwithstanding this criticism of W.Sv, there do seem to be two useful points in the above which it is worthwhile making explicit: Supervenience, if it holds at all - in a weak or strong version - will hold in all possible worlds. At least this amount of modal force seems to be embodied in Davidson's statement and presupposed in all Kim's formulations. Also, it should be noted that supervenience, in even its weakest version, presupposes the existence of *some* properties in the supervenience base. In Kim's analysis, these are the properties from which the maximal base property is constructed. This is a small point indeed, but one to be remembered when the supervenience of the social on the individualistic is being considered. Once the objects have been specified which bear the properties related by supervenience, it must be the case that these objects have individualistic as well as social properties.

Other criticisms of Kim's formulations, which apply to both strong and weak supervenience, will be considered with S.Sv.

In order to overcome the modal deficiencies of W.Sv., Kim strengthens the formulation of supervenience to S.Sv with the insertion of a second modal operator. Again, like the modal operator in W.Sv, this operator is left undetermined until its specific context is known, although Kim seems to suggest that in the supervenience of the mental on the physical, the necessity invoked should be nomological or

physical necessity [Kim 1979:42]. I would be inclined to agree with this. The second operator is included to ensure that in every possible world the maximal base properties determine the same supervenient property and not just any supervenient property, which may be the complement of the originally considered supervenient property, or may not have any bearing on it at all. This is a way of solving Kim's difficulties with W.Sv. However, I think there are additional problems for supervenience which need to be raised. First, though, a comment about the formulations of S.Sv *per se*.

Formulations (3) and (5) are not equivalent. The base property, G, in (3) is only a sufficient condition for the supervenient property. The second modal operator ensures that G is a strictly sufficient condition, *i.e.* that it is a sufficient condition in all possible worlds. Not so in (5), where the base property, H, is coextensive with the supervenient property. When strengthened by the second modal operator, the base property thus becomes a necessary and sufficient condition for the supervenient property in all possible worlds. (In (4) and (5) it will be noticed that G is being used as the supervenient property and H as the base property; but since the property correlations in (4) and (5) are symmetrical, this should not cause confusion.)

It will also be useful to consider how Kim sees the S.Sv of (5) to be related to that of (3), despite the fact that (5) appears to be a much stronger formulation of supervenience than (3). In (3), Kim claims that a maximal base property can be constructed to be sufficient for each supervenient property, S. By the same reasoning, one can be

constructed to be sufficient for the complement of each supervenient property, -S. But if a base property, B, is sufficient for -S, then its complement, -B will be necessary for S. Thus there is a base property which is necessary and one which is sufficient for S. The disjunction of these two maximal base properties will be coextensive with the supervenient property, S, *i.e.* both necessary and sufficient for it. This explains Kim's strengthening of the formulation of both weak and strong supervenience to (4) and (5), respectively.

All the formulations of supervenience make use of maximal base properties and it is now time to consider these directly. The base includes all physical properties attributable to individuals in the domain. Maximal properties are built up from the conjunction of all the physical properties an individual has, and the complements of those physical properties he or she lacks. In W.Sv, this maximal property is, under the particular circumstances, *i.e.* in the actual world, a sufficient condition for the supervenient property. In S.Sv, this conjunction of properties is disjoined with all the other conjunctions of physical properties and their complements which could instantiate the same supervenient property under different circumstances. In this way the maximal properties may be extended to necessary and sufficient conditions for the supervenient property. This disjunctive maximal property (which, for an infinite base might be an infinite disjunction of infinite conjunctions of properties) is then taken to be coextensive with, *i.e.* necessary and sufficient for, the supervenient property in all possible worlds in the case of S.Sv. Similar base properties are proposed for all other supervenient properties. This construction of

base 'properties' in Kim's characterisation of supervenience has evoked much criticism of his position.

In (5), Kim claims that if A is strongly supervenient on B, then the supervenience base can provide, for any supervenient property, a base property which is necessarily coextensive with it. We have discussed what this claim involves; it is now time to consider whether or not it provides a viable characterisation. In order for his characterisation to be plausible, Kim has been obliged to stipulate that the supervenience base be closed under the Boolean operations of conjunction, disjunction and complementation. This amounts to an insistence that, for any base properties, the conjunction of these properties is also a base property, as is their disjunction. Furthermore, for any base property, its complement, *i.e.* its negation, is also to be included as a base property. Such an assumption is essential if it is to be possible to construct maximal base properties. Forseeing possible objections, Kim has offered the following qualification:

> "Note that these infinite operations are operations on properties, and are therefore comparable to infinite unions and intersections routinely defined over sets, not infinite conjunctions and disjunctions for linguistic expressions such as sentences and predicates. Any dubiousness that may attach to the latter need not attach to the former."
> [Kim 1983:47]

I am prepared to go along with Kim in accepting infinitely disjunctive and conjunctive properties, notwithstanding substantive criticism of them in the literature [See Armstrong 1978: Ch.14]. Even if the criticism were ultimately successful, it would still be plausible for Kim to evade it by modifying supervenience slightly to be a

relation between 'properties', extended properties or disjunctions of properties and their complements.

With regard to complementary properties, some such modification will probably have to be introduced in the light of the following, more serious objection which has been levelled against them [See Teller 1983b and Post 1983].

The supervenience base is supposed to contain physical properties exclusively, both simple ones and more complex Boolean constructs. However, the complement of a physical property is not itself a physical property. This can be established by considering the absurd consequences which follow from the counter-claim. Each object lacks some physical properties. By definition, each object then has the complements of these properties. If these are physical, it would follow that each object has some physical properties, *i.e.* is partly physical. But just as each object lacks some physical properties, so too will it lack some mental-, social-, aesthetic-, moral-, abstract- *etc.* properties. Indeed, it will lack some properties of every kind. But then by the above claim, it would have complementary properties of each of these different kinds. Consequently, if the complement of a property of a certain kind were itself of the same kind, then everything would be part mental, social, aesthetic, moral, abstract *etc.* This consequence is intolerable. Thus it must be inferred that the complement of a property of a particular kind is not itself a property of that kind. The complements of physical properties are not physical

properties. Hence the supervenience base - contra-Kim - is not closed under complementation.

However, the objection does not have the damning consequences for supervenience that might have been anticipated. Even if the complement of a physical property is not itself a physical property, it does not follow that it belongs to some other determinately specifiable class of properties. Although not physical, the complement of a physical property is certainly not mental, social, aesthetic, moral, abstract *etc.*, either.

Consequently, this does not lend support to the claim that the mental supervenes on any other kind of phenomena as well as the physical, a claim which could vitiate supervenience. At worst, it necessitates that supervenience be amended to refer to a relation between mental properties on the one hand, and physical properties *and their complements* on the other. There seems no reason not to accept this.

Thus far it has been established that two families of properties, A and B, which are sets of mental and physical properties respectively, are in a relation of strong supervenience iff it is possible to construct maximal base, *i.e.* physical properties to be necessarily coextensive with each supervenient, *i.e.* mental property. These maximal base properties are constructed from conjunctions of all the physical properties and their complements, which fully characterise the instantiation of a particular mental property. The conjunctions are

then disjoined with all other such conjunctive constructs which *could* characterise the instantiation of the same mental property in different possible worlds. If this maximal base property is necessarily coextensive with the mental property in question, and if the same procedure could be used to generate necessary coextensions between each mental property and some maximal base property, then the mental can be claimed to be strongly supervenient on the physical.

A little more needs to be said about the nature of these necessary coextensions before the possibility of providing them between mental and physical properties, or between social and individualistic properties is considered. Kim's criterion of necessary coextension can be unpacked into two narrower claims, both of which would have to be satisfied for necessary coextension. They are the claims that:

1) maximal properties from the supervenience base provide nomologically/metaphysically necessary conditions for the supervenient property, and
2) they provide comparable sufficient conditions.

These strictly necessary and strictly sufficient conditions may be infinite disjunctions of infinite conjunctions of single individualistic properties.

A brief word is in order about the satisfaction of a strictly sufficient condition and a strictly necessary condition in the modal context of Kim's formulation of supervenience. A family of properties, A, supervenes on another family, B, if $\forall x[M(x) \Leftrightarrow P(x)]$ is *necessarily*

true where MϵA, PϵB. That is, A supervenes on B if the following two statements hold:

i) $N(\forall x)[P(x) \Rightarrow M(x)]$, and

ii) $N(\forall x)[M(x) \Rightarrow P(x)]$

(i) represents the sufficiency of the supervenience base and (ii) its necessity. At this point, it is important to remember that P is an extended property, with a structure something like the following, where the p_{1-n} are single, physical properties:

P =

$(p_1 \,\&\, p_2 \,\&\, p_3 \,\&\, -p_4 \,\&\, -p_5 \,\&\ldots) \vee (p_{10} \,\&\, p_{11} \,\&\, -p_{12} \,\&\, -p_{13} \,\&\ldots) \vee \ldots$

Each bracketed disjunct on the RHS represents one configuration of physical properties which instantiates a particular mental property in some possible world. The whole disjunction on the RHS is typically satisfied when one of its disjuncts is satisfied. With regard to providing a strictly necessary condition required by (ii) above, the disjunctiveness of P poses no problem. P has simply been constructed as the conjunction of the base properties and their complements which comprehensively describe the actual conditions under which the supervenient property is instantiated. This extended property, say $(p_1 \,\&\, p_2 \,\&\, p_3 \,\&\, -p_4 \,\&\, -p_5 \,\&\ldots)$ is then disjoined with other possible ones like it, which describe different conditions under which the supervenient property *could* be instantiated. The lengthy, disjunctive property is then necessary in all possible worlds. It will be satisfied whenever at least one of the disjuncts is satisfied. Hence it will be satisfied automatically, as the first disjunct will always be satisfied, since it was *constructed* to be necessary in the actual world.

Thus the condition that the base provide nomologically/metaphysically necessary conditions is unproblematically satisfied.

The situation in the case of the sufficiency of P is somewhat more complicated. This is because base properties which are individually sufficient conditions for a particular supervenient property in different possible worlds, are not severally sufficient for it in all those possible worlds. In general, the following syllogism *does not hold*:

P_1 is sufficient for M in world 1
P_2 is sufficient for M in world 2

$\therefore$ $(P_1 \vee P_2)$ is sufficient for M in (world 1 and world 2)

This syllogism breaks down in the cases where P_1, but not P_2, is instantiated in world 2, and where P_2, but not P_1, is instantiated in world 1. In both cases, the disjunct $(P_1 \vee P_2)$ is satisfied. But in the first case, this is because of P_2 which is not sufficient for M in world 1, and in the second case because of P_1 which is not sufficient for M in world 2. It makes no significant difference that each property P is actually a complex conjunction of physical properties and their complements.

Extrapolating from this, it can be claimed more generally that the disjunction of all the properties sufficient for M in different possible worlds, will not be sufficient for M in all possible worlds. Thus (i) above is not satisfied, leaving the sufficiency of the base for the supervenient level unproven.

However, there would seem to be a way of solving the problem of the sufficiency of the supervenient base. It will be remembered that Kim's formulation originally required the base to be necesssarily coextensive with the supervenient level. This was then subdivided into two conditions *viz.* necessity and sufficiency; each of which should be nomologically or metaphysically satisfied in accordance with whatever interpretation of Kim's modal operator was deemed appropriate. In the case of necessity, this was built into the condition by disjoining the conditions necessary in each possible world into one lengthy condition, necessary in all worlds *i.e.* metaphysically necessary.

The attempt to do the same thing with sufficiency failed. However, I would propose that this is the case, not because of some deep-rooted problem with sufficiency *per se*, but rather, because of the attempt to qualify sufficiency with a modal operator. It seems intuitively clear that there is a significant difference between a condition which is materially sufficient in the actual world, say, and one which is to be sufficient in all possible worlds. The latter sufficiency, I have shown, is not arrived at by disjoining conditions from different possible worlds, each of which might be sufficient in that world, merely in the weak sense of material sufficiency.

Rather, I would suggest that the kind of sufficiency embodied in Kim's formulation of supervenience, could be better interpreted thus: maximal properties from the supervenience base which are genuinely sufficient for a supervenient property, are properties which, in *every* world in which they are instantiated, are sufficient for the

supervenient property in question. Thus, consider again the above example, where the sufficiency of (P_1 v P_2) for M in (world 1 and world 2) was denied, on the basis of the counter-example in which P_1 satisfied the disjunct in a world where only P_2 was sufficient for M. The premises used in this example would be strengthened under the new interpretation of sufficiency in so far as their restriction to a particular world would be lifted *i.e.* P_1 would only constitute a genuinely sufficient condition for M if it were sufficient for M in *every* world in which P_1 was instantiated.

The same syllogism might then be reparsed as follows:

$$\begin{array}{l} N(P_1 \Rightarrow M) \\ N(P_2 \Rightarrow M) \\ \hline \therefore \quad N[(P_1 \text{ v } P_2) \Rightarrow M] \end{array}$$

This syllogism is clearly valid, with the conclusion guaranteed by the premises.

It is thus in this sense that the sufficiency of the base conditions in supervenience must be understood. This squares comfortably with our intuitions. Consider a familiar example: if pain is taken to supervene on a certain configuration of C-fibre firings and other neuro-physiological states, then the possibility of a world in which a subject had the same C-fibres firing and was in the same neuro-physiological state, yet was not in pain, is ruled out. Of course this does not deny that there may be a world in which pain supervened on different C-fibre firings, or on a different neuro-physiological (or other) mechanism altogether. The point is merely that, if there is a

relation of sufficiency between properties in one world, and if the same properties are instantiated simultaneously in another possible world, then in the latter world too, they must be related by sufficiency.[2]

After all, this would seem to capture the force of supervenience as a relation in which the supervenient level is *determined* by the base. Strong supervenience is not supposed to be a relation in which two levels of properties just happen to be correlated in some world in which they are jointly instantiated. Rather, it is a relation where the base underpins the supervenient level, and the supervenient level is dependent on the base.

Finally, perhaps the most forceful objection to Kim's characterisation of supervenience is that it could only be achieved, if at all, at the expense of the autonomy of the supervenient level. The existence of necessary coextensions between each supervenient property and some extended base property makes supervenience look very much like reduction in a new guise. Perhaps the supervenient level is only determined by the base if it is ultimately reducible to it, and consequently not autonomous after all. In the words of Post, "How can determination be non-reductive?" [Post 1983:165]

Let us confront this objection directly. In the chapter on reduction, it was proposed that reduction depended on the satisfaction of two conditions, *viz.* the Condition of Connectability and the Condition of Derivability. Both conditions needed to be fulfilled

before a relation of reduction could be established. CC would be satisfied where all the properties of the reduced theory could be identified with properties of the reducing theory and it was suggested that this might be achieved by identifying their causal powers. CD would be satisfied when it could be shown that all the laws of the reduced theory could be derived from the reducing theory.

In the case of strong supervenience, which depends on the supervenience base providing strictly necessary and strictly sufficient conditions for the supervenient theory, it might appear that CC has been satisfied. In particular, it might be that the causal powers of the supervenient properties would be encompassed by the causal powers of the disjunctive properties at the supervenience base. However, in the previous chapter it was argued that the disjunctions of properties comprising the supervenience base would not form natural kinds. Thus they would not mirror the kinds of properties at the supervenient level. But then, how could they be expected to mirror the causal powers of the properties at the supervenient level?

This point does not need to be argued further, for even if the causal powers of the properties comprising the supervenience base *did* mirror the causal powers of the properties of the supervenient level, this still would not lead the concept of strong supervenience to collapse into reduction. This is because reduction depends on more than the satisfaction of CC. It depends on the satisfaction of CD as well. While CC captures the ontological elements of the relation, CD captures the epistemological elements of it. In conncection with CD

there is an independent case to be made to show why S.Sv. does not satisfy it and consequently why S.Sv does not collapse into reduction. This is largely Kim's response to the objection.

While Kim accepts that both reduction and supervenience have in common the requirement that there be necessary coextensions between the two levels of phenomena or theories involved in each of the relations, he insists that reduction requires the satisfaction of further conditions which supervenience fails to fulfil. More specifically, he construes reduction as an *epistemological* relation in so far as much importance is laid on the increased explanatory power it affords. This effectively captures the weight of CD. By contrast, supervenience is an *ontological* or *metaphysical* relation, emphasising how the levels are actually related rather than how we know about their relation or are able to explain it.

> "If you believe the mental strongly supervenes on the physical, you are committed to there being a physically necessary and sufficient condition for each psychological state. The physical base may be very complex and may not even be humanly discoverable; as a result it may be *unavailable* for a physicalist reduction or explanation of the psychological state. But it *must* exist if the mental strongly supervenes on the physical...
>
> "Thus strong supervenience is not the same thing as the *reduction* of the supervenient family to the base family; reduction is an explanatory procedure, and to carry out a reduction we must identify for each basic supervenient property its supervenient base property. Here 'identify' is a somewhat vague but clearly epistemological notion. Such identifications are the business of the special sciences (in their relation to more basic sciences) and not the business of philosophy. By philosophical argument, however, we can show that such bases must exist. The strong supervenience of A on B points to a possibility of reducing A to B. Reduction is a complex notion with subtle epistemological implications; if reduction is to provide explanatory understanding, reducibility will crucially depend on the perspicuous describability of the underlying coextensions in

B of the properties in A. Supervenience alone does not guarantee that a theory that will supply such descriptions exists or will ever exist." [Kim 1983:49-50]

Teller has added his own, although not unrelated, comment in defence of supervenience as a relation distinct from reduction [Teller 1983b:58-60]. Rather than focussing on the correlations between levels of properties, his counter-objections concern the base alone, or, more particularly, the base properties which are put forward as necessarily coextensive with the supervenient properties. These properties are physical in such a way that could not conceivably undermine the autonomy of the supervenient level. First it must be remembered that in order to provide conditions for the supervenient properties which are sufficient in all possible worlds, the base will include vast amounts of extraneous physical information relevant to the specific supervenience context. Among others, it will include physical properties which apply contingently to people under particular cirmumstances. These properties will all be possible candidates for incorporation into the base necessary and sufficient condition.

However, the disjunction of conjunctions of physical properties and their complements is just not the sort of property to feature in any physical laws, in any event not in physics as practised today. Consequently there will be no chance of the lawlike correlations between levels linking types or kinds of phenomena. But this is precisely what reduction would require. In this respect, the position of supervenience discussed here has much in common with aspects of

Hellman and Thompson's and Nagel's position of physicalism and, in particular, with Fodor's position as presented in the previous chapter.[3]

It has been my intention in this chapter to flesh out the sense in which supervenience allows for determination without reduction. Perhaps the result is something of a disappointment, for indeed there is little of the physical necessity that might be provided by physical laws in the determination of the supervenient level by the supervenience base. But this is exactly the extent to which supervenience captures a weaker relation than reduction. Supervenient properties are not reducible to supervenience base properties. Supervenient properties are not necessarily coextensive with *types* of properties from the supervenience base. Nonetheless there are necessary coextensions between supervenient properties and properties from the supervenience base. The base properties, however, are heterogeneous and not likely to feature in the laws of the base level theory.

Notwithstanding this, there can be no change in the supervenient level without there being some simultaneous change in the base level. Furthermore, two objects cannot have the same base properties without also having the same supervenient properties. These are precisely the criteria for supervenience, specified by Davidson, which were introduced at the beginning of this chapter. In the course of the chapter they have been formalised rigorously in the light of Kim's work on supervenience.

The position of supervenience has thus been developed in detail and evaluated. In the chapters which remain, it will be considered whether or not this relation could be beneficially applied to the relation between theories of social and individualistic phenomena respectively.

CHAPTER 4

SUPERVENIENCE II: APPLICATION

In the previous chapter, the possibility of a determinative relation between two levels of phenomena was considered where it was not possible to establish the more stringent relation of reduction between them. The claim that a family of properties on one level determines a family of properties on another level has been shown to be central to any relation of supervenience. The relation of supervenience, as suggested by Davidson and developed by Kim, and its implications were examined. This is useful for the purposes of this thesis in so far as it provides a detailed framework against which to evaluate the possibility of applying supervenience to the relation between social and individualistic phenomena.

In keeping with the formulation in the previous chapter, the relation to be applied is a metaphysical one, rather than an epistemological one. Given that the relation is one between two families of properties common to a domain, the discussion in this chapter will be restricted to the possibility of applying supervenience to the relation between the social properties and the individualistic properties (which may include psychological, physiological and physical properties) *of people*. Clearly this is limiting, as it ignores anything which could be said of specifically

social entities (like Parliament, the legal system *etc.*) and their social properties (being democratic, being based on trial by jury *etc.*). Notwithstanding this, supervenience might valuably be applied to a significant subset of social and individualistic phenomena *viz.* the social and individualistic properties of individuals. In what follows in this chapter, any reference to the supervenience of the social on the individualistic will be assumed to refer only to this subset of social and individualistic phenomena. In the last chapter, an attempt will be made to generalize the relation of supervenience so that it can be applied more comprehensively to the relation between theories of social and individualistic phenomena.

Supervenience can be applied to two kinds of properties in a domain only if the elements of the domain instantiate at least some properties of both kinds. With people as the domain, this criterion is easily satisfied: for instance, a particular person might have, amongst others, the social property of being Queen, and the individualistic property of being right-handed.

Also, if supervenience is to be applied to the relation between social and individualistic properties, it will be important that there be some means available for distinguishing social from individualistic properties. That there is a distinction to be made is certainly not contentious, as there are paradigmatic examples in each category. As previously cited, 'being Queen' is unquestionably a social property, and 'being right-handed' is equally obviously an

individualistic property. There are, however, some rather borderline cases, for instance relational properties, such as 'being a more senior member than x', and intentional properties with social content, such as 'believing y to have been given a fair trial'.

The more properties included as individualistic and excluded as social, the easier it will be to prove that the social supervenes on the individualistic, as there will be a narrower range of social properties for which to find necessary coextensions with individualistic properties. Moreover the individualistic resources from which to provide these will be greater. Yet it is also true that the more difficult a case is to prove, the more significant its proof will be, if successful. For the purposes of this dissertation, the distinction will be drawn by fiat, at what seems to be the most intuitively sensible point.

The issue of relational properties is not of much help in drawing the required distinction. Relational properties can themselves be either individualistic or social. Consider the following examples: (i) X is older than Y

(ii) X is a member of Club Y.

Initially it seems as though there would be little chance of defending the supervenience of the social on the individualistic, without the incorporation of some relational properties in the individualistic base. However, it is perhaps also true that any social property could be reparsed as a relational property between individuals, where the relation between them was a social one.

There is thus a subtle danger with relational properties, *viz.* that they may let too much into the base and consequently trivialize supervenience. It will be better if relational properties be excluded from the base where possible. 'Being a member of' will thus have to be cashed out in terms of signing a token of a specific type of piece of paper, paying a certain fee, turning up with other people at specified places and times to do certain things *etc.* Needless to say, this will vary from organization to organization and will be enormously cumbersome. However, at this stage that should not be considered to be an over-riding objection. It will be raised again towards the end of the chapter.

Perhaps the case of intentional properties will be of more help in delineating social and individualistic properties. This is a delicate point as both defendants of individualism [Watkins 1953:97-8] and defendants of holism [Ruben 1985: 163-72] as well as protagonists and antagonists of reduction [Mellor 1982:69 and Ruben 1985:125-26, respectively] have rested their cases on the incorporation and exclusion respectively of such socially intentional properties.

D.H.Mellor has defended the distinction between beliefs and propositional attitudes about social entities on the one hand, and genuinely social properties of individuals on the other. He argues that *e.g.* x's belief that Elizabeth II is Queen of England ', should be included on the individualistic level, as it makes reference, not to the social entity, the Queen, but only to x's

belief. By contrast, the property that Elizabeth II has, *viz.* being Queen of England, is a social property, as it directly implies the existence of a social entity, the monarchy (or, for Mellor, some appropriately structured group). In this chapter, I shall adopt Mellor's distinction, without using it, as he does, to support reduction.

The individualistic supervenience base will thus comprise physical properties and mental properties, the latter including beliefs about social entities and properties. The supervenient level will comprise properties of individuals which make direct reference to social institutions *e.g.* being Queen, which makes direct reference to the monarchy, or signing a cheque, which makes indirect reference to the institution of banking.

In a different context, a distinction has been defended between weakly social and strongly social properties: both can be comprehensively identified with (individualistic) mental properties, but only the former can be reductively so identified *i.e.* identified with mental properties which do not themselves presuppose some social property [Ruben 1985:123]. The supervenient level will include weakly social and strongly social properties. However in a discussion of supervenience, the possibility of *reductively* identifying each social property with some individualistic property is not what is at issue. Hence the distinction between strongly and weakly social properties need not be pursued further here. All that needs to be established for supervenience, is that all social

properties can be linked with individualistic properties in so far as necessary coextensions can be established between them and some individualistic properties. The latter may include peoples' attitudes to social phenomena, but must make reference to them only opaquely *i.e.* within the context of some propositional attitude.

Supervenience requires that for *each* social property, there should be some individualistic property necessarily coextensive with it. It will thus be impossible to prove the supervenience of the social on the individualistic conclusively by considering a few particular social properties. However, if for a typical example of a social property, it is possible to construct the appropriate properties from the individualistic base, then there should be no reason to assume that the same strategy could not yield necessary coextensions for every other social property. If this obtains, then there is a case for the general application of supervenience to the relation between social and individualistic properties.

Let us now consider the more formal conditions which need to be satisfied by the relation between social and individualistic properties before the social can be claimed to supervene on the individualistic. An adaptation of Davidson's statement of supervenience would read as follows:

> "Although the position I (*sic!*) describe denies there are socio-individualistic laws, it is consistent with the view that social characteristics are in some sense dependent, or supervenient, on individualistic characteristics. Such supervenience might be taken to mean that there cannot be two events alike in all individualistic respects but differing in some social respect, or that a person cannot alter in some social

> respect without altering in some individualistic respect." [Adapted from Davidson 1970:214]

Continuing in the same spirit, a version of Kim's strong supervenience (henceforth S.Sv) would be the following:

> "If A strongly supervenes on B, then for each property S in A there is a property I in B such that S and I are *necessarily* coextensive - that is, the biconditional $(\forall x)[S(x) \leftrightarrow I(x)]$ is necessarily true." [Kim 1983:49]

Here x ranges over people, A is the family of their social properties, B is the family of their individualistic properties, S is a social property and I an individualistic property. As in the previous discussion of the formulation of supervenience, I is a B-maximal property, which may be infinite if the individualistic base, B, comprises infinitely many properties. The maximal property is a construction of disjunctions of possible conjunctions of all the base (individualistic) properties that a person in the domain has and the complements of all the base properties (s)he lacks. Kim's criterion for S.Sv in its adapted version will only be satisfied by the relation between social and individualistic properties if, for each social property that a person has, there is some maximal individualistic property (*i.e.* disjunction of possible conjunctions of individualistic properties) which is necessarily coextensive *i.e.* both strictly necessary and sufficient, for the social property. If the same procedure could be used to generate necessary coextensions between each social property and some maximal individualistic property, then the social could be claimed to be strongly supervenient on the individualistic.

This condition raises once again the problem of the type of necessity involved in Kim's formulation. The criteria for supervenience do not require social properties to be coextensive with individualistic properties in all *logically* possible worlds: it is perfectly possible to *conceive* of a world in which the coextensions did not obtain. The necessity of the coextensions between base and supervenient levels will thus be weaker than logical necessity. Following Kim's suggestion, mentioned in the previous chapter, it will be understood that the coextensions should be either nomologically or physically necessary. This will also apply to the interpretation of strict necessity and strict sufficiency.

In Chapter 3, it was shown that the necessary coextensions between the base and the supervenient level could be satisfied by two other conditions. Thus a family of properties, A, supervenes on another family, B, for $S \in A$, $I \in B$, if

i) $N(\forall x)[S(x) \Rightarrow I(x)]$, and

ii) $N(\forall x)[I(x) \Rightarrow S(x)]$.

(i) represents strict necessity and (ii) represents strict sufficiency. The satisfaction of (i) follows immediately from the construction of the maximal base property. This was discussed at length in connection with the supervenience of the mental on the physical in the previous chapter, pp.120-122. If S and I are substituted for M and P, social and individualistic properties for

mental and physical properties respectively, then *mutatis mutandis* the reasoning here is exactly the same as in Chapter 3. For strict necessity, the supervenience base includes all those individualistic properties actually instantiated with the social property. These are then disjoined with other sets of individualistic properties which might have been instantiated with the same social property in different nomologically possible worlds. This maximal base property does range over all possible worlds. Moreover, it is satisfied, since the disjunct of properties from the actual world is always satisfied, and the satisfaction of the whole disjunction follows from this. So the individualistic base can provide a strictly necessary condition for the supervenient level.

(ii) represents the second condition for the base to be necessarily coextensive with the supervenient level, strict sufficiency. It was shown in detail that more than mere material sufficiency is required when it was shown that the following syllogism is *false*. Again, S ϵ A, I ϵ B.

I_1 is sufficient for S in world 1

I_2 is sufficient for S in world 2

$\therefore$ (I_1 v I_2) is sufficient for S in (world 1 and world 2)

As before, this syllogism breaks down in the cases there I_1, but not I_2, is instantiated in world 2, and where I_2, but not I_1, is instantiated in world 1. In both cases, the disjunction (I_1 v I_2)

is satisfied. But in the first case, this is because of I_2 which is not sufficient for S in world 1, and in the second case because of I_1, which is not sufficient for S in world 2. It makes no significant difference that each property I is a complex conjunction of individualistic properties and their complements.

Rather, the necessary coextension between base and supervenient level can only be established if there are *strictly* sufficient conditions for social properties in the base. These will be provided by individualistic properties which, in *every* world in which they are instantiated, are sufficient for the social property in question. This may be represented by the following syllogism:

$$N(I_1 \Rightarrow S)$$

$$N(I_2 \Rightarrow S)$$

$$\therefore \quad N[(I_1 \vee I_2) \Rightarrow S]$$

Individualistic properties which are co-instantiated with social properties in different worlds, being sufficient for the latter in only some of those worlds, are thus to be eliminated. This ensures that if there is a relation of sufficiency between individualistic and social properties in one world, and if the same properties are instantiated simultaneously in another possible world, then in the latter world too, they must be related by sufficiency.

Hence in order for the social to supervene on the individualistic, there must be strictly necessary and strictly sufficient individualistic properties for each social property in each possible world. It will be important to see that this criterion is met if supervenience is to be applied to individualistic and social properties.

Enough has now been said about what is required in order for the claim that the social supervenes on the individualistic to be defended. It is time to consider the relation as it obtains between social and individualistic properties in the actual world and to see what claims can be made about the relation in other possible worlds. For the purposes of the following discussion, the property, 'being Queen of England', will be used as a paradigmatic example of a social property attributable to an individual.

The domain of people who could instantiate this property is infinite if time is taken to extend infinitely into the future. So in a trivial sense, the property could be instantiated in infinitely many ways *viz.* by infinitely many different people. This itself does not argue against supervenience though, as the latter is perfectly compatible with an infinite domain. Supervenience is also compatible with an infinite supervenience base. However, it is feasible that each instantiation of some social property, say 'being Queen of England', falls within a specifiable range of individualistic properties. In so far as it is a social property in Mellor's sense, it refers directly to the same social entity, the

English monarchy, in each instantiation. This will be elaborated below.

It does seem plausible that, for each particular instantiation of this social property, a complete characterisation of the situation could be given, purely in terms of individualistic properties. For instance, when Elizabeth II, in her capacity as Queen, invites a Member of Parliament to form a government, an individualistic description could be given in terms of one person meeting another, saying certain things and performing certain actions, where both parties have appropriate and well-informed beliefs about their actions and the significance of them. Such beliefs, it has already been decided, form part of the individualistic base, notwithstanding their obvious social content. The context in which these actions are carried out could presumably also be characterised in terms of the physical actions and intentional states of numerous other people.

If the role of the Queen in forming a government can be characterised individualistically as above, there seems no *prima facie* reason why similarly individualistic characterisations could not be given for all the other roles associated with the instantiation of the social property of being Queen of England. This looks like a case for an application of supervenience, but does it in fact conform to Kim's more rigorous criteria?

Let us spell out the strategy being employed in slightly greater detail: the instantiation of the social property 'being Queen of England' is analysed in terms of the fulfillment of certain social roles *viz.* forming a government, opening Parliament, being head of the Anglican Church, leader of the Commonwealth *etc.* In order for these roles to be fulfilled, the person in question has to have the necessary authority conferred upon her. Typically, this will involve a public ceremony, with the conferral of some physical token (in this case, for instance, a piece of precious metal, studded with brilliant crystals which is placed on the person's head) which allows other people to identify that person as the one with the authority to perform the specified roles. This ensures that people have the right beliefs about Elizabeth II. This, in turn, means that they are able to recognise certain actions she performs as the fulfillment of her various roles as Queen of England. Thus, as Mellor has argued,

> "All this role, like any role, needs is a suitable distribution of psychological attitudes among the people concerned." [Mellor 1980:69]

The instantiation of the social property 'being Queen of England' is thus dependent on the appropriate belief states in individuals, accompanying the fulfillment of certain social roles.

Attention needs to be drawn to one feature of the social-individualistic relation in virtue of which it might seem *not* to parallel the mental-physical relation for which supervenience was originally intended. In both cases, the domain of the supervenience relation comprises people. According to the initial formulation,

people's mental properties supervene on their physical properties and, although this does not seem to be stated explicitly, it is presumably the mental properties of one person which supervene on the physical properties of *that* person. Once it can be shown that this is the case for all people in the domain (and there seem to be no good reasons for thinking that people are not identical in this respect) then the more general claim that the mental supervenes on the physical can be asserted.

However, the same is not true for the relation between the social and individualistic properties of people. The social properties of a person will not be determined by the individualistic properties of that person alone. Social properties are relational in so far as any social property of a person will be determined by the individualistic properties of that person, in conjunction with the individualistic properties - notably the beliefs about the original person - of a number of other people. In particular, for someone to instantiate the social property 'being Queen of England', more is required than just that the person *believe* herself to be Queen of England. Other people too will have to have appropriate beliefs, justified in some way accepted to be appropriate under the circumstances. These widely-held beliefs are essential for the social roles to be fulfilled. Let us consider these roles in more detail.

My claim is that once the original social property can be precisely and unambiguously specified in terms of roles, it will be

possible to construct a maximal, individualistic property from the supervenience base. This will comprise a physical description of the actions performed and a characterisation of the attendant mental states with which they are performed and with which they are perceived and recognised by others. This property will be a conjunction of all the individualistic properties instantiated (physical and intentional properties included) and the complements of those individualistic properties not instantiated when the social role is performed.

It follows directly from the way the maximal base property is constructed that it will provide a necessary condition for the social property. However, it will be remembered that more than this was required from the necessary conditions provided by the base in Kim's formulation of supervenience. More specifically, they were required to be necessary in all possible worlds. This condition, as we have seen, is trivially satisfied: the base property is simply constructed to be the disjunction of all base properties which are necessary for the instantiation of the social property 'being Queen of England' in the actual world, disjoined with all other configurations of base properties which are necessary for the same social property in all other possible worlds in which the property is instantiated. This disjunctive property will always be satisfied since it must have at least one disjunct satisfied, *viz.* the one which is necessary in the actual world. In this way, the individualistic base is able to provide a strictly necessary condition for the social property.

Admittedly, the satisfaction of this condition makes the supervenience relation between social and individualistic properties look rather superficial. However, the satisfaction of the second of Kim's criteria for supervenience will prove to be more exacting. According to this criterion, the base is required to provide strictly sufficient conditions for each supervenient property.

As in the case of necessary conditions, individualistic base properties can be artificially constructed to be sufficient for each social property in the actual world. However, this is not enough to satisfy the criterion of strict sufficiency. As explained above, what is required of the individualistic properties is that they are sufficient for the social property with which they are correlated, in every world in which they are instantiated.

It remains to be seen whether or not maximal individualistic properties from the base provide *strictly* sufficient conditions for social properties. In order for them to be strictly sufficient, it must not be possible for an individualistic base property to be instantiated without its corresponding social property being instantiated. Moreover, where both base and supervenient properties are instantiated, that particular individualistic property must be the one which is sufficient for the social property.

Perhaps an example will help to clarify this. It is possible that the Queen, for instance, could open Parliament in some possible world without, say, Mrs Thatcher performing the actions she does,

with the beliefs she has. This would be the case if the ruling party elected a new leader. The point to be made is merely that in the actual world, at the most recent opening of Parliament, the Queen could not have opened Parliament without some of the individualistic properties being as they were *i.e.* without performing the actions the Queen performed, without Mrs Thatcher performing the actions *she* performed, and without their beliefs about themselves, each other, and the significance of what they were doing being as they were. These individualistic properties are part of the supervenience base on which the social event, the opening of Parliament, supervenes.

In addition to these individualistic properties, the individualistic base will also potentially include many irrelevant features of the social event. It is only those physical and mental properties which are relevant to the opening of Parliament which must be included in the maximal base property. The Queen might have smiled at a certain point, although she did not, without altering the social course of events. Similarly, Mrs Thatcher might have worn a different hat, or might have had some different beliefs and intentions about the forthcoming Parliamentary session. Such individualistic features need not be included in the individualistic base property. To the extent that Kim proposes to include *all* instantiated base properties in the maximal base property, his maximal base properties might seem to be broader than required to capture the determination of the social by the individualistic. However, this feature will be discussed again in the last chapter,

when the rationale for his all-encompassing maximal properties will come to light.

It has been established that in the actual world, the Queen could not have opened Parliament without the base property that was instantiated, being instantiated. But strict sufficiency requires more than this, *viz.* that the instantiated base property could not have been instantiated without being sufficient for the opening of Parliament, and that it could not be instantiated in another world where Parliament was opened without, there too, being sufficient for the opening of Parliament.

In any other possible world, if *exactly* the same maximal individualistic property were instantiated, *i.e.* one comprising the same actions, performed with the same mental states and the same beliefs of and about the people involved, then this individualistic property would also be sufficient for the Queen's opening Parliament. Here it is important that the base includes all the beliefs about the significance of the social event and the authority of the protagonists. In the case where the Prime Minister were different, the beliefs of Mrs Thatcher, who in this instance may be present, but not as Prime Minister, would be different. Similarly, in the case where everyone believed that an imposter was the Queen, even if the imposter herself were deluded into believing that she was the Queen, still the beliefs of (the real) Elizabeth II would be different, and consequently, the individualistic base would be different. Hence in any other possible world in which Elizabeth II,

Mrs Thatcher and all the other protagonists manifested *exactly* the same individualistic properties, I submit that this situation too would be an instance of Parliament being opened by the Queen.

This is in no way incompatible with the possibility of an alternative, individualistic property, in a different possible world, being sufficient (indeed, strictly sufficient) for the opening of Parliament in that world. This could be possible even in a world with exactly the same protagonists as the actual world, as long as they do not bear individualistic properties which are identical to those which are sufficient for the Queen's opening of Parliament in the actual world. The individualistic property which is sufficient for the social property in this world cannot be instantiated in another world and yet fail to be sufficient for the social property in that world. Under such circumstances, the individualistic property will in fact always be.different, since it will comprise different belief-states resulting from the different social state of affairs. This makes it plausible to accept that the individualistic property constructed from the base is not only sufficient for the social property instantiated, but is indeed strictly sufficient.

In this manner, strictly sufficient conditions can be provided by the individualistic base for each of the social roles that were agreed to be fulfilled when somebody instantiates the social property of 'being Queen of England'. These may be conjoined to characterise the social property comprehensively.

The second part of Kim's criterion for supervenience is thus also fulfilled by the relation between social and individualistic properties. This justifies the conclusion that, according to Kim's characterisation of strong supervenience, the social supervenes on the individualistic, at least when the relation is restricted to the social and individualistic properties of individuals.

It has been objected that conditions for strong supervenience, particularly in so far as they include necessary connections between the supervenient level and the base, satisfy, in effect, the conditions for the reduction of the supervenient level to the base. In the rest of this chapter it will be considered whether the supervenience of the social on the individualistic, as defended above, captures the reduction of the social to the individualistic, or whether it is a genuinely distinct, weaker relation between the two levels of phenomena. Given the imposed restriction of supervenience to social and individualistic properties, it will be the reduction of *these* properties which is considered.

D.H. Mellor has raised this objection to supervenience and he uses it to argue for the reducibility of the social to the individualistic. Kim, by contrast, claims that supervenience and reduction are distinct relations and that the former does not imply the latter. Consider Mellor's argument in the following passage:

> "Supervenience, however, does not entail the strongest, reductive claim I wish to make: namely that acceptable approximations to social laws can be derived by suitable bridge principles from those of psychology (physics, physiology, *etc.*). So let us try to suppose that sociology, though supervenient, is not thus

> reducible...In that case there would be a law (deterministic or statistical) relating two or more social attributes of a group, an approximation of which is not derivable from the psychology of its members. Now we might indeed discover a correlation between such [social] attributes...without knowing how to derive anything like it. But how do we know that the correlation is a law, and not a mere coincidence? To be a law, it has to support conditionals...Now I follow Braithwaite and others in supposing us to give a generalisation this status only if we think it a consequence of a true explanatory scientific theory. We need not know what the theory is, of course; we need only believe that there is one. And in this case we know that the group law to be derived is sociological; that is, it relates attitudes supervenient on its members' actions and attitudes. The law acceptably approximate to our correlation must therefore be derivable from some true explanatory psychological theory. Were it derivable from nothing, it would be no law at all; were it not derivable from psychology, it would not be a social law. The reducibility of social science, like its supervenience, is thus secured by its own self-restriction to what depends on human action."
> [Mellor 1982:70]

This is Mellor's defence of the reducibility of the social to the psychological. At the beginning of this quotation, he claims that supervenience does not entail reducibility in the sense that it is not possible to derive psychological approximations to all social laws. He then uses a hypothetical case where supervenience holds, but reduction does not, postulates a social correlation, and goes on to deduce that if the correlation is in fact a social law, then it is derivable from psychological theory. In this way he claims victory for reducibility. This contradicts the initial assumption that supervenience does not entail reducibility.

Of course supervenience itself does not presuppose that there are any social correlations or laws. Mellor's claim is merely that any social correlations or laws that there are, in a context where

supervenience holds, will be reducible to psychology. I wish to dispute this argument on the grounds that it is based on an untenable assumption.

Mellor introduces a hypothetical correlation between social attributes. This correlation will only be law-like, he claims, if it is explainable. It will only be explainable if it is derivable from something *i.e.* if it is a consequence of a true, explanatory, scientific theory. Given the supervenience of the social on the psychological in this context, Mellor claims that the correlation "must be derivable from some true explanatory psychological theory". [Ibid.] In making this claim, Mellor is assuming that there are no primitive sociological laws.

This seems precisely to beg the question in favour of reducibility. Why does Mellor assume that the correlation should be derivable from psychology?[2] It should be evident from the discussion in both Chapters 2 and 3, that this is a far stronger claim than supervenience would defend. The supervenience of the mental on the physical or the social on the individualistic is quite compatible with absence of any *laws* at the supervenience base, from which supervenient laws can be derived. It is not clear that supervenience makes any such claims about laws at all. Moreover, as a metaphysical relation, it is unlikely that it would. However, more importantly, supervenience has been shown to provide necessary coextensions between mental (social) properties and disjunctive base properties. But these maximal base properties are heterogeneous and

do not represent unified types or kinds of physical (individualistic) properties. As such, these base properties would not be the sort of properties to feature in laws of the base theory. Thus the derivability of the laws of the supervenient theory from the laws of the base theory, purely on the strength of supervenience, is far too much to assume.

The alternative for Mellor would be to assume that the social correlation is derivable from sociology *i.e.* that it is approximated by some *social* law. The fact that this alternative is not considered seems (possibly inadvertently) to carry with it the implication that sociology is not a suitable candidate for the derivability of laws. This might be because it is not deemed to be 'a true explanatory scientific theory'. But if *this* were the case, then Mellor's argument for reducibility would be vitiated, since there would have been nothing in the first place, with appropriate theoretical status, to be reduced. Perhaps Mellor should not be saddled with this and there may be a way of avoiding these rather dire consequences. Nonetheless, the fact remains that his argument to show that the reduction of two theories follows automatically from their supervenience, has been undermined.

On the opposing front in this debate, Kim has argued that supervenience and reduction are distinct kinds of relations, with the former weaker than the latter. His arguments [Kim 1983:49-50] will be considered, especially in so far as they are applicable to the relation between social and individualistic phenomena. Kim's

first claim is that, given the supervenience of one level of phenomena on another, the supervenience base, however complex it might be, must exist. Given the way in which the base is formulated, it may exist across different possible worlds. This reflects the idea of supervenience as a metaphysical relation. From the existence of the base, however, it does not follow that it can be used to reduce or explain the supervenient level of phenomena. This is the point at which Kim's position differs sharply from Mellor's.

Kim maintains a sharp distinction between supervenience, a metaphysical relation, and reduction, an epistemological relation. In support of this, he writes:

> "Reduction is a complex notion with subtle epistemological implications; if reduction is to provide explanatory understanding, reducibility will crucially depend on the perspicuous describability of the underlying coextensions in B [the base] of the properties in A [the supervenient level]. Supervenience alone does not guarantee that a theory that will supply such descriptions exists or will ever exist." [Ibid.:50]]

There seem to be two points being endorsed here:

i) Once a relation of supervenience is established, the supervenience base - providing necessary coextensions between base and supervenient level - does exist, even though it

> "may be very complex and may not even be humanly discoverable." [ibid.:49]

ii) Reduction achieves explanatory understanding when the coextensions between reducing and reduced theories not only exist, but are identified in a perspicuous form.

This provides the key to the distinction between supervenience and reduction, giving backing to the claim that the supervenience of two levels of phenomena does not entail the reduction of one to the other. The important feature of reduction is that its correlations, once identified, should be perspicuous. Reduction is supposed to enhance explanatory understanding by bringing two levels of phenomena under one common set of explanatory principles.

This is not required by supervenience at all. Although supervenience does require necessary coextensions between supervenient and base levels, these coextensions have been shown to involve properties at the base level which would not enhance explanatory understanding. The maximal base properties are heterogeneous and they may involve infinite disjunctions of conjunctions of properties. Moreover, they range over all physically (nomologically) possible worlds. As such, they do not represent unified individualistic types which would feature in individualistic (psychological) laws. Consequently they would not provide individualistic explanations of social phenomena and would therefore not enhance explanatory understanding or unity.

In keeping with this, the particular supervenience relation which holds between social and individualistic properties, does not promote explanatory unity and is thus not reductive.

This conclusion can be supported independently. In the supervenience relation between social and individualistic, the

social level is indispensible for the formulation of the individualistic base. Reduction, on the other hand, asserts that everything that is explained by both levels, could ultimately be explained purely in terms of the reducing level. While the reduced level may not be eliminated in all cases of reduction, as, for instance, in the example of temperature and mean kinetic energy, nonetheless it is generally accepted that there is nothing more to temperature than mean kinetic energy. Moreover, if we were prepared to sacrifice convenience, then it would be possible to do without temperature.

Supervenience between social and individualistic phenomena could never achieve this for the following reason. The specification and definition of the *social* roles which must be performed for the instantiation of the social property, is crucial in the construction of the individualistic base. In particular, it is precisely the fact that a specific role is being performed that determines which physical and intentional properties of which individuals should be included in the base. Obviously not every property of every person can be included in the base as this would rule out the possibility of ever being able to differentiate between any two social properties being instantiated simultaneously. The only way of doing *this*, seems to be in the light of the particular social property instantiated and consequently, the social roles performed. It is because the base depends in this way for its formulation on the supervenient level, that the supervenient level

could never be eliminated. In this respect supervenience cannot be accused of being reduction by a new name.[3]

These arguments should dispel the fear that supervenience is just reduction in a new guise. Indeed, they may do more than that. They may cast doubts on the value of the purely metaphysical relation of supervenience *per se*. At this stage there seem to be two main drawbacks to the application of supervenience to the relation between social and individualistic phenomena. The first is that, thus far, the application has only attempted to incorporate the relation between the social and individualistic properties of people. Clearly there is more to the social realm than this. Not only are there the social properties of social entities to consider, but there are the social entities themselves.

Secondly it may be objected that the supervenience relation is too contrived to be able to establish anything useful. The construction of the supervenience base is so artificial that it undermines the original claim that supervenience captures the *determination* of the social by the individualistic.

Notwithstanding these objections, the task of this chapter has been completed. It has been shown how the relation of supervenience elaborated in Chapter 3 can be applied to the relation between the social and individualistic properties of individuals. In the following chapter, an attempt will be made to deal with the first drawback mentioned above by generalising the supervenience relation

to incorporate all social properties and social entities into the supervenient level. If this can be achieved satisfactorily, then the general claim that the social supervenes on the individualistic will have been defended.

In the conclusion, the significance of this relation of supervenience between social and individualistic phenomena will be assessed.

CHAPTER 5

SUPERVENIENCE III: GENERALIZATION

In the previous two chapters, the relation of supervenience has been considered in some detail and an attempt has been made to show how this relation might be applied to the relation between social and individualistic phenomena. The success of the application of supervenience has been hampered by certain features of the relation, notably the fact that it related different properties of the *same* object at the base and supervenient levels. In the socio-individualistic case this meant that it could only cover, at the supervenient level, the social properties of individuals, since it was only they who had both social and individualistic (psychological) properties *i.e.* both base and supervenient properties. This meant that supervenience was only applicable to a small subset of all social properties. Social entities and *their* properties had been overlooked.

In this chapter it will be considered how the supervenience relation might be generalized to include a broader and more representative sample of social relata. The overall success of supervenience in giving a comprehensive characterisation of the relation between social and individualistic phenomena will depend on the success of these efforts.

Gregory Currie has attempted to generalize the supervenience relation in this way [Currie 1984]. A discussion of Currie's supervenience thesis will provide the starting point for this chapter. Some problems for his position will be raised, before considering a rather different construal of the supervenience relation, *viz.* that provided by Raimo Tuomela [Tuomela 1984, 1985a,b and forthcoming]. Although I will show that Tuomela's position is inadequate in several crucial respects, it will be used as the basis for a generalized version of supervenience.

Currie's work on supervenience has been influenced by Kim. More specifically, like Kim, Currie is interested in supervenience as a metaphysical relation which may have little methodological or epistemological import. However, consistent with the findings of the previous chapter, Currie recognizes that there are problems in applying this exact relation to the social-individualistic relation. Many social claims, in particular those about social entities such as institutions, processes or events, cannot be analysed under Kim's relation. In particular, it is not possible to correlate the social properties of these entities with some maximal conjunctive disjunction of individualistic properties of the same entities. This is what Kim's formulation of supervenience requires.

This is because social entities do not possess individualistic properties: they possess none of the properties of the supervenience base. They do not have minds of their own, even in some tenuous sense of 'mind'. Hence it is not possible for

psychological properties to be attributed to them. Consequently it cannot be the social and individualistic or psychological properties of *social entities* that supervenience is relating.

Any determinative relation such as supervenience between social and individualistic phenomena will need to link social entities and their properties on the one hand with individuals and their properties on the other. Currie wishes to characterise a relation like this. In even the relatively straightforward case where some social property of an individual supervenes on individualistic, psychological properties, it will often be the case that the social property in question is determined, if at all, not simply by the psychological properties of the person who has the social property, but by a number of other people and some of their respective psychological properties as well. Therefore in any plausible generalization of the supervenience relation, the domain of objects in the base will not be identical to the domain of objects at the supervenient level.

This much is conceded from the start in Currie's paper, where the supervenience relation is described as

> "a non-causal, non-reductive relation of dependence between facts about social institutions and facts about the behaviour of individuals." [Currie 1984:345]

Here another divergence from Kim's formulation of supervenience becomes apparent: the relata are not properties, as they are for Kim, but *facts*. Supervenience, for Currie, is a relation between social facts and individual facts, characterized as follows:

> "Social facts I take, roughly speaking, to be facts about social institutions and roles, and facts about people's actions, where those actions have a social significance...By individual facts I mean facts about the inner mental states of individuals and facts about their bodily movements...It must be acknowledged that the specification of a person's mental states requires unrestricted reference to social concepts."
> [Ibid.:346-47]

More specifically, Currie wishes to characterise global supervenience as the relation between the totality of social facts and the totality of individual facts. The totality of individual facts of a world *w*, he calls the individual history of *w*. In the same way, the totality of social facts of a world *u* he calls the social history of *u*. He then formalises a preliminary relation of global supervenience as follows:

$(\forall u)(\forall w)$(if *u* and *w* have the same individual history then they have the same social history).

This definition is further refined by quantifying over time, *t*, as well:

$(\forall u)(\forall w)(\forall t)$(if *u* and *w* have the same individual histories up to *t* then they have the same social states at *t*).

Currie offers very little argument in support of this formulation of global supervenience, but he does offer some general points to elucidate the relation. Given the relation of global supervenience, if we form the class of all possible worlds which share their individual histories, then the same worlds will also share their social histories. More specifically, from the second definition, if they share their individual histories up to time t,

then they will also share their social states at time t. In other words, according to global supervenience, the totality of individual facts up to a particular time *entails* the social facts or social state at that time. But the converse does not hold. This is because of the so-called 'plasticity of social concepts', also known as the variable realizability of social concepts. This is the claim that any social property (or fact, or concept) can be realized by many different configurations of individuals. Consequently, the totality of social facts might be the same in two worlds, but their individual facts might not coincide at all. From this Currie draws two important conclusions.

The first is that the relation of global supervenience is asymmetrical. In keeping with this, it is possible for there to be a change at the individual level without any social variation, while any change at the social level *must* be accompanied by a change at the individual level. In this respect, the level of individual facts is taken to be metaphysically prior to the level of social facts.

The second conclusion Currie draws from variable realizability is that the social is not reducible to the individual. Yet variable realizability alone is surely an insufficient basis for the denial of reduction. Even a characteristically reducible concept like temperature can be instantiated by the mean kinetic energy of infinitely many different substances. The point has to be made that in the temperature case, the different substances all have certain

relevant features in common *viz.* their mean kinetic energy. In the social-individualistic case, there is no such individualistic feature which all instantiations share and in virtue of which they have the social property. Let us assume that this is the way Currie wishes to use the plasticity of social concepts to argue against reduction.

Currie claims that the social is also autonomous with regard to the individual. By this he is asserting something stronger than the failure of reduction. He argues that the level of social facts is capable of variation independently of the level of individual facts. His argument for this runs as follows: two entities are independent if each is capable of variation independently of the other. Then he claims:

> "If *x* is an individual and *y* a social institution the states of *x* and *y* are capable of independent variation." [Ibid.:357]

Here he is arguing that in the social-individual case, it is conceivable that there could be a change at the social level without any change in a particular individual.[1] It is also conceivable that the individual may change without effecting any social change. These claims, he insists, merely reflect that it is *global* supervenience that is being proposed as the relation between the social and the individual. The behaviour of one particular individual may not be relevant to what happens at the social level; it is the behaviour and mental states of *all* individuals which determine what takes place at the social level. The social supervenes on individuals, globally construed.

Finally Currie considers whether or not global supervenience should be supplemented by a principle analogous to Hellman and Thompson's principle of physical exhaustion [See Chapter 2]. This would be a principle of individual exhaustion, according to which,

> "social entities like institutions are either mereologically or set-theoretically constituted out of individuals, and perhaps purely physical objects as well." [Ibid.:356]

His claim that it should not is supported entirely by reference to David Ruben's arguments against the possibility of identifying a social entity like France with any particular geographical location or collection of people [Ruben 1985: Ch.1]. Ruben's conclusion is that there are some social entities which cannot be identified individualistically *i.e.* that the reduction of all social entities to individuals fails. Currie extrapolates from this to the conclusion that the social is not exhausted, in Hellman and Thompson's sense, individualistically.

This is Currie's position. It has been presented in some detail because it is immediately attractive to the analysis of supervenience offered here to the extent that it broadens the supervenience relation to include, at the social level, not only social properties of individuals, but all social facts. This will include facts about social institutions and their properties as well. However, on closer scrutiny, his position encounters serious difficulties. These will now be discussed.

Currie's relation of global supervenience is a relation between facts. The advantages of reformulating supervenience in terms of facts have been described. Yet there are problems too. The first is that Currie offers nothing on the individuation of, or identity criteria for, facts *per se*. On the distinction between social and individual facts, he seems to be saying that social facts are facts about social things or facts about individuals where these have social import, while individual facts are facts about individuals' actions and intentional states. This is not particularly helpful as it presupposes a prior distinction between social and non-social or individualistic properties and entities. In Currie's defence it might be claimed that such a distinction between social and individual entities and properties could be drawn by fiat, as suggested in previous chapters. More seriously though, there are important identity questions for facts which Currie does not consider, *e.g.* whether or not facts which refer to the same entity by different names or different definite descriptions are the same.

The problem for Currie's global supervenience seems to be even more severe. The central claim of global supervenience is the claim that if the *people* of worlds *w* and *u* share their individualistic properties up to time t, then they will share their social properties at time t. Moreover the social *entities* of worlds *w* and u will share their social properties at t as well. The second claim is largely ignored by Currie since the formulation of supervenience in terms of facts instead of properties evades it. Talk of social facts blurs the distinction between facts about individuals (who may

be acting in a social context, or in virtue of social properties), and facts about social entities. Both are incorporated as social facts and no distinction is drawn between them.

Yet the plausibility of generalizing supervenience to global supervenience will surely depend at least partly on the relation that holds between social entities and their properties on the one hand and individuals and their properties on the other. This has to be considered in conjunction with the relation between the social and individualistic properties of individuals. Kim's formulation of supervenience could be applied to the latter relation. A generalized version of supervenience should apply to the former as well. If social entities are determined by individuals and their social and individualistic properties and if the social properties of individuals supervene on individualistic properties, then the prospects for generalizing supervenience seem good. If on the contrary, the relation between social entities and individuals is vague, indeterminate or if social entities are autonomous with respect to individuals, this will undermine the supervenience relation between social and individualistic phenomena.

It seems crucial for any attempt to generalize supervenience to address this issue; yet Currie's formulation of supervenience in terms of facts, which glosses over these distinctions, appears not to do this.

Perhaps even more detrimental for global supervenience is Currie's claim that, although the individual has metaphysical priority over the social, the social is autonomous and social entities are not reducible to, nor exhausted by, individuals. These claims will now be assessed.

With regard to autonomy, Currie's argument was that the social was autonomous to the extent that it could vary independently of the individual. However, this is surely mistaken. The main problem with this claim is that it contains no quantifiers. I would argue that Currie only manages to reconcile supervenience with autonomy because he is equivocating between universal and existential quantification over individuals, *x*.

Currie argues that the social is autonomous with regard to the individual if it is possible for the levels of social and individual facts each to vary independently of one another. If he is claiming that there is some particular individual, *x*, which can vary independently of some or indeed of all social institutions, *y*, then this seems to be a rather uninteresting claim which poses no threat to supervenience. Supervenience could accept that there may be some members of the base domain who exert absolutely no influence on the supervenient domain. The global supervenience of the social on the individual would not be undermined by this.

On the other hand, if his claim is that all individuals *x* can vary independently of some or all institutions, *y*, then this most

certainly *does* pose a threat to global supervenience. In fact it seems to contradict it directly. It will be remembered that one of the claims of Davidson's initial outline of supervenience was that there could be no change at the supervenient level without some change at the base level. It is this claim, amongst others, that it has been the business of this thesis to formalise, defend and apply to the social-individualistic relation. Yet Currie's principle of independent variation seems in direct opposition to it. His arguments to show that the tension between independence and supervenience is illusory have proved to be inadequate under scrutiny.

As additional support for the autonomy of the social, Currie alludes to Ruben's argument against reduction to show that a principle analogous to Hellman and Thompson's principle of physical exhaustion cannot be applicable to the social-individualistic relation *i.e.* the social is not exhausted by the individualistic. Without going into Ruben's argument which may or may not be compelling, there seems to be a serious flaw in this claim for social autonomy too. I shall argue that Currie misses Hellman and Thompson's point.

Ruben's argument is against reduction, or, more specifically, against the reductive identification of a social entity with a 'reducing entity' *i.e.* set or group of individuals [Ruben 1985:44]. Hellman and Thompson's position [See Chapter 2] is specifically intended to be compatible with the failure of reduction. In the

mental-physical case, Hellman and Thompson concede that there may be no physical *entities* with which to identify mental entities *i.e.* that there may be no case for reduction. Nonetheless they show that from the set of all physical predicates, there will be some construct of predicates which is identical with each mental predicate. In other words, in the social case, the Hellman and Thompson analogue would be a claim that there are no individualistic constructs with which to identify each social entity. This is much weaker than the claim that Ruben is arguing against *viz.* that there are no individuals with which to identify each social entity. Consequently, Currie cannot use Ruben's argument to deny Hellman and Thompson's claim for the 'exhaustion' of the social by the individual. Thus the autonomy of the social, in any sense stronger than its mere irreducibility, remains unproven. So too does its independence.

I see no way in which global supervenience could be defended in conjunction with a claim such as Currie's for the independence of the social from the individualistic. In the light of this, in the context of this thesis, the most plausible way of defending supervenience seems to be to renounce the principle of independence. This leaves open the possibility of either accepting the principle of individual exhaustion or rejecting it. However, the endorsement of its analogue, the principle of physical exhaustion, in Chapter 2 will certainly tilt the balance in its favour as far as the argument of this thesis is concerned.

It has been shown that Currie's attempt to generalize the relation of supervenience - to make it fully applicable to the relation between social and individualistic phenomena - is seriously flawed. In particular, Currie's global supervenience has been found wanting in its analysis of the relation between social entities and individuals. Any discussion of supervenience which is applicable to the complex relation between social and individual will have to pay more attention to this.

At this stage, it seems likely that a generalized version of supervenience may prove to be a composite relation, comprising three main parts:

i) the relation between the social and individualistic properties of individuals (as considered in Ch.4),

ii) the relation between social entities and individuals, and

iii) the relation between the social properties of social entities and properties of individuals.

The analysis of (ii) will almost certainly have an effect on the analysis of (iii).

An alternative analysis of the supervenience relation between the social and the individual, *viz.* that provided by Raimo Tuomela [Tuomela 1984, 1985a,b, forthcoming] will be considered to see if it may prove useful for the formulation of (ii) and (iii).

Tuomela has been concerned primarily to provide an account of social action. This is significantly different from an account of

the metaphysical relation between social and individual phenomena which has been considered here. Consequently, it is not proposed to give a comprehensive summary of his theory. Rather, some aspects of Tuomela's account which could be usefully applied to the generalized supervenience relation will be borrowed.

For Tuomela, a social collective or group acts only if its members act. In this sense social action is constituted by the actions of individuals.

> "If a collective does something X then at least some of its members, say $A_1 \ldots A_k$ must jointly do, in the right circumstances, something $x_1 \ldots x_k$, *viz.* their parts of X; and in normal circumstances the performances of these parts serve to generate or 'make up' X."
> [Tuomela forthcoming:2]

There are a number of points to emphasise here. The members must act jointly and in the right circumstances. Presumably neither 'members', 'joint action' nor 'right circumstances' will be specifiable purely individualistically. Consequently, this account may look circular. However, when it is remembered that it is not the *reduction* of the social which is being considered, then it can be recognised that this is not a fatal flaw. Supervenience does not defend the claim that it should be possible to formulate the entire base level completely independently of the supervenient level.

In spelling out the supervenience base, it is legitimate to make reference to social entities, properties or predicates. For instance, as has been discussed in Chapter 4, this will more than likely be the case in deciding which individualistic properties are

to be included in the individualistic base for a social property such as 'being Queen of England'. First it is necessary to decide which social roles are to be fulfilled before someone instantiates the social property in question. Then it can be established which individualistic properties are instantiated when these roles are performed and which individualistic properties might be instantiated in other possible worlds. But what these individualistic properties have in common, in virtue of which they will be selected, will only be characterisable by reference to the social level. This is one of the things that makes the maximal base properties of the supervenience relation different from the sort of lower-level properties which would support reduction.

The following discussion of Tuomela's work will focus on three closely interrelated elements of it. They are:

1) the structure of a social institution or group,
2) the rules of group membership and the roles of members, and
3) joint social action.

With regard to (1), Tuomela draws a useful distinction between two categories of social group, on the basis of their structure. In the first category are groups such a crowds. These have a relatively loose structure and the group acts whenever individuals act as members of that group. For instance, a crowd runs amok just in case the members of that crowd run amok.

By contrast, social groups with a more rigorously defined, formal structure act because some or all agents act on their behalf. For instance, a bank decides to increase its opening hours when its directors vote in favour of longer opening hours and its branch managers, under their instruction, implement this.

If the supervenience of social action on the actions of individuals is being defended, then both types of social action need to be covered. By comparison with the second, the first type seems relatively straightforward. Its identity criteria are closely approximated by those for sets: *that* crowd is just the set of people under certain circumstances which has *those* members. The relation between the group and its members here is more direct than in the case of groups with a more formal structure. It is more complicated to give identity criteria for the latter. The ensuing discussion will therefore concentrate on the second type of group, on the assumption that if the actions of groups manifesting a formal structure supervene on the actions of the group's members, then so too will the action of all social groups.

Moreover, this is in keeping with the likelihood that the distinction being drawn here is not hard and fast. The formal structure of a group is likely to vary by degree from group to group, with the two examples considered falling at opposite ends of a continuous spectrum. Groups such as the family might be thought of as being somewhere in the middle, having more structure than a crowd, but less than a bank.

The structure of a group is one of its definitive characteristics for Tuomela. Which individual actions will constitute an action by the social group depends on the relation between the members and the group. This relation depends upon the structure of the group. But the structure of a group is to be analysed in turn in terms of (2), the roles and rules which restrict and delimit what counts as appropriate behaviour for members of the group. For instance, a member of a rowing team would not be permitted to attach a tiny outboard motor to her oar, whereas a member of an Unusual Watersports Club might be.

Tuomela introduces a tripartite distinction between 'ought-to-be' rules, 'ought-to-do' rules and 'may-do' rules. These rules specify the roles of members: what they have to do to remain members, what they may do, and what they should be. The positions of individuals in the group are then construed as conjunctions of their role-rules. Position-holders should not intentionally violate these rules.

The specification of the roles and rules of membership provides the social and normative context for the individual action. The rules of membership may be construed as the normative aspect in so far as they prescribe what behaviour is acceptable and desirable by the members.[2] The roles of members may be construed as the social aspect of the conditions under which members act. Members' roles will be specified in relation to other members and to the objectives of the institution. The specification of these roles will often

make reference to the institution of which the individual is a member and possibly to other institutions as well. For instance, the role of the treasury might be construed as looking after the finances of the government. This involves references to the further social concepts of 'finance' and 'government'. Nonetheless, if what the individual members of the treasury have to do in order to look after the government's finances can be specified, then the treasury may be taken to supervene on individuals. But clearly it can be achieved: this is precisely what is offered by any job-description.

This gives a suggestion as to how part (ii) of the relation of generalized supervenience might be specified *viz.* the relation between individuals and social entities. It is to be specified in terms of the rules of membership and members' roles. A social entity will supervene on those individuals which satisfy the conditions imposed by its rules for membership and its members' roles. In the case of a group with limited structure, the constraints will be minimal, but in the case of a highly-structured institution such as the House of Commons, say, constraints on members may be formidable. Thus in generalizing supervenience, it is proposed that social institutions supervene on their members in this way.

The specification of individual actions in terms of social roles and rules of institutions is absolutely crucial in turning a series of actions by individuals into a joint social action, (3).

Individuals act in accordance with publicly acknowledged and accepted rules. On the basis of these, mutual expectations and beliefs can be built up about how other members will act under given circumstances to achieve agreed upon social ends. These mutual expectations and beliefs form the link between individuals acting singly and individuals acting jointly to bring about a social action.[3] Much will thus depend on how this notion of joint social action is analysed. According to Tuomela, it is:

> "action performed by several agents who suitably relate their individual actions to others' actions in pursuing some joint goal or in following some common rules, practices, or the like." [Ibid.:5]

So a joint social action is performed when individuals act in an appropriate context, mindful of the rules and structure of the group as members of which they are acting. Furthermore, they act intentionally, in the belief that other members will be acting in whichever way all operative members believe will bring about the desired social end. In other words, they believe in the sincerity of other members' intentions to act.

It should also be mentioned that the actions of the individual members will often be qualitatively distinct from the resultant action of the group *e.g.* a committee may act to pass a motion, on the basis of its members' actions of voting in its favour. However this does not introduce the sort of independence that Currie was advocating for the supervenient level. The social action, even if it is distinct from its constitutive individual actions, is nonetheless determined by them in the following way. For any social

action or action by a social institution, there will be some individuals acting in such a way that constitutes the social act under the given circumstances *i.e.* under the rules and roles governing membership of the institution.

On the basis of this Tuomela offers the following definition of supervenience in which he aims to formalise the way the actions of social groups are constituted and determined by the actions of their individual members. A is the supervenient family of predicates, B the base family, C is the social and normative circumstances under which the group exists, N is an unspecified modal operator, x, y, z, v range over action tokens, F(x) reads 'action token x is an F'ing performed by the collective' and $G_1(y_1)$ reads 'y_1 is an action token of G_1'ing':

A actionally supervenes on B, given C iff in C, N(x)(F in A)
$[\{F(x)\} \rightarrow \{(\exists y_1)\ldots(\exists y_m)\}\{(\exists G_1 \text{ in } B)\ldots(\exists G_m \text{ in } B)\}$
$\{G_1(y_1)\&\ldots\&G_m(y_m)\}] \ \&$
$N(z)(G \text{ in } B)[\{(z_1)\ldots(z_m)\}\{G_1(z_1)\&\ldots\&G_m(z_m)\} \rightarrow \{(\exists v)F(v)\}]$,
for some m. [Ibid.:18]

The idea being formalised here is that, for every token of a social action type, there will be a series of individual action tokens which instantiate it. Then the RHS of the conjunction says that if another series of individual actions are tokens of the same type, this series must instantiate a token of the social action type originally in question.

It is my objective to see whether or not Tuomela's definition of actional supervenience could be adapted to provide a formulation of part (iii) of the relation of generalized supervenience, *viz.* the relation between the social properties of social entities and the properties of individuals. The following paragraphs will show that it can be.

In Chapter 4, when supervenience was being applied to the relation between the social and individualistic properties of individuals, social properties of individuals were spelled out in terms of the individuals performing certain roles, which in turn could be analysed as individuals acting in certain ways under certain circumstances. The analysis being offered here has something in common with this. Social action by an institution is being determined by the actions of individuals who are members of the institution. They are members by virtue of fulfilling certain prescribed social roles and by acting in accordance with the rules governing both their membership and the behaviour which is appropriate for members.

In this respect, individuals are members of social institutions in virtue of certain properties that they have. Among these will be properties pertaining to membership and behavioural roles. Thus at the base level of the supervenience relation there will be individuals and their social properties. However, in Chapter 4 it was shown that the social properties of individuals could be analysed in terms of the individualistic properties instantiated

when the people act under specific circumstances. Thus the supervenience base can be reformulated to exclude social properties of individuals and include the individualistic properties on which they supervene instead.

What remains to be achieved by a generalized version of supervenience, is the reformulation of the supervenient level in terms of properties of social entities rather than in terms of social actions. Once this has been accomplished, and if it can be shown that the relation of supervenience still holds between the two levels, the argument for a generalized relation of supervenience between social and individualistic phenomena will be complete.

Tuomela's definition is of actional supervenience and he is considering whether or not the actions of social groups supervene on the actions of their members. This does not quite mirror the original idea behind supervenience throughout this thesis which has been that there should be no *change* at the supervenient level without some change at the base level.

Now some changes at the supervenient level will be actions of social groups, but others will not be. So how do the latter fit into Tuomela's schema? More specifically, may there not be changes to a social group without there being any simultaneous changes to the group members with which the social changes can be correlated? Was this not the case, for instance, when Sinn Fein was denied media coverage? This was not brought about because Sinn Fein members did

anything. Rather, the change was imposed from outside the social group, by another individual or social group. In this case, it seems that the social group does not supervene on its members but on some other individuals.

There is a delicate balance to be maintained here. On the one hand, we have to accept that a change in a social group may be caused by, or result from, a change unrelated to the group's members. However, on the other hand, it has never been claimed that the supervenient level is *caused* by the supervenience base, nor that a change in the supervenient level must be *caused* by a change in the base. What has been claimed is that every change at the supervenient level must be *correlated* with some change at the supervenience base. But in the above example, the latter condition still holds: Sinn Fein being denied media coverage may be correlated with Gerry Adams not being interviewed by reporters, with voice-overs being added to dialogues between Sinn Fein members and interviewers, with newspaper editors deleting stories about the activities of known Sinn Fein sympathisers *etc.*

So even if a social entity changes dramatically as a result of some actions unconnected with the actions of its members, there will nonetheless be changes to the membership which reflect the social changes. Take another example: If the constitution of a club is changed by law rather than by its members, the members - if they are to continue to be members of the changed club - will have to reflect

the legal changes in their actions and roles. It is these individualistic changes which are to be correlated with the social changes to ensure that the relation of supervenience is sustained.

One consequence of this is that the sense in which the supervenient level can be said to be *determined* by the supervenience base, is very weak indeed. But this is not a new feature of supervenience which emerges only in connection with the generalized relation of supervenience between social and individualistic phenomena. It has been recognised throughout the discussion of this thesis.

So we can conclude that the restriction of Tuomela's account to actional supervenience does *not* make it any less suitable as a candidate for a generalized version of supervenience.

Tuomela's definition of supervenience could then be adapted as follows: A and B would be the supervenient and base families of properties respectively. F(x) would no longer read 'action token x is an F'ing performed by the collective,' but rather, 'x has the property of F'ing.' $G_1(y_1)$ would read analogously 'y_1 has the property of G_1'ing.' Most usually, G_1 would still be an action token as the property that y_1 had would be the property of acting in accordance with certain rules and roles. The following example may help to clarify the formalism: let F(x) read 'the committee has the property of having passed the motion', while $G_1(y_1)$ reads 'member y_1

has the propety of having raised her arm at an appropriate time (*i.e.* voted in favour)'.

It can be seen here that x ranges over social entities whereas y ranges over individuals. This divergence of domains had been avoided by Tuomela in his use of x and y to range over action tokens. However, it will not be possible to retain this in a generalized version of supervenience.

Consequently, in the same way that an individual's having a social property was determined by that individual identifying and performing certain roles, a social institution's having a social property is to be determined by its membership - specified in terms of certain rules and roles - having certain properties. It then follows from this, and from Tuomela's definition, that any change to the social properties of the institution must involve some change to the properties of the membership. Of course this need not involve the whole membership; a change in one important individual may suffice. This does not imply that any change to the social properties of the institution must result from changes in the properties of the membership as has been discussed above.

This would seem to be exactly what was required to satisfy part (iii) of the relation of generalized supervenience, *viz.* the relation between the social properties of social entities and the properties of individuals. Together, parts (i), (ii) and (iii) provide a comprehensive analysis of how the relation of

supervenience can be generalized and applied to all aspects of the relation between social and individualistic phenomena. The respective parts of the relation have not been rigorously formalised, although it should be evident, in the light of both Kim's formulation of supervenience and Tuomela's version of actional supervenience, that this should not pose any special difficulties.

Before concluding this chapter, a comparison will be made between the generalized version of supervenience offered here and Kim's initial formalisation. The most significant difference, as has already been stressed, is that generalized supervenience is a relation between supervenient and base levels which have *different* domains. Kim's supervenience was a relation between different kinds of properties of people; supervenience generalized is a relation between social entities and their properties on the one hand and properties of individuals on the other. In its most complete form, generalized supervenience should be used in conjunction with the social-individualistic application of Kim's supervenience which relates the social and individualistic properties of people.

Another difference is that Kim's relation holds between properties. Supervenience generalized in Tuomela's formulation relates actions. More generally though, Tuomela takes the domains of the supervenient and base levels, A and B respectively, to be predicates. However, the version of supervenience which has been adapted from Tuomela's formulation once again relates properties: of social entities and individuals. Supervenience is also taken to

cover the relation between social entities *per se* and their individual members. This avoids the problems with infinite disjunctions and conjunctions which may arise when formulating supervenience in terms of predicates.

Kim initially avoided taking the domains as predicates because it was not possible to form a 'maximal-predicate' to cover all possible base instantiations of a supervenient predicate. Infinite boolean operations over predicates were not well-formed. This problem has not arisen for Tuomela because he has not attempted to provide maximal predicates from the base. Generalized supervenience, however, should be able to accommodate the formulation of maximal base properties, if required. Similarly, it should be possible to form maximal sets of individuals as the base for social entities.

Another point of comparison is the modal strength of the supervenience relation. Tuomela has not elaborated on the modal strength of his actional supervenience. As it stands, couched in terms of material implication, it amounts to a fairly weak doctrine, asserting no more than a coinstantiation between base and supervenient predicates. But as was shown in the discussion of Kim in Chapter 3, such a version of weak supervenience (generalized or not) is inadequate, since it fails to capture the sense in which there *could* not be a change in the supervenient level without some change in the supervenience base. This aspect of supervenience is only captured if it is necessarily the case that there is such a

coinstantiation between base and supervenient levels, *i.e.* if it is the case in all possible worlds. But if this holds, then it is possible to form a maximal disjunction of all possible base instantiations. Moreover, this disjunctive instantiation will be necessarily co-extensive with the supervenient instantiation. However this is only well-formed for properties and not for predicates. Consequently, it is not available to Tuomela.

In the case of actional supervenience, the only option seems to be to concede that, although the material implication may hold in all possible worlds, it cannot be formulated as a necessary co-extension. This undermines the plausibility of the doctrine. Generalized supervenience, however, would not have a problem here. It is compatible with a formulation in terms of necessary co-extensions which hold in all possible worlds. Throughout this thesis, the nature of the modalities involved has been kept vague and it is doubtful that anything about the relation of supervenience itself dictates how the modal operators should be interpreted. My own preference as specified, influenced by Kim, is for the modal operator to range over all physically or nomologically possible worlds *i.e.* over worlds which are like our own in respect of the laws of physics.

This brings the relation of generalized supervenience considerably closer to Kim's formulation. Both relations represent a metaphysical relation without apparent epistemological or methodological implications. In Chapter 4 it was shown that the

supervenience relation could be applied to the relation between social and individualistic properties of individuals. In this chapter it has been shown that the relation can be generalized to cover the relation between social entities and individuals and also the relation between the social properties of such entities and properties of individuals. This completes the generalization of supervenience in its application to the relation between social and individualistic phenomena.

CONCLUSION

The consideration of the relation between social and individualistic phenomena has now been completed. Three candidates for this relation have been presented at some length. They are reduction, determination and, a special case of the latter, supervenience. In discussing all three, the emphasis has been on metaphysical relations, holding between distinct levels of phenomena. I have been concerned to show what sort of correlations between phenomena these three relations postulate, to evaluate these and to assess the plausibility of applying them to the relation between social and individualistic phenomena. In so far as supervenience has appeared to be a likely candidate, it has been examined at greatest length. Throughout this thesis, issues of epistemological and methodological importance have been largely overlooked. Consequently, it has nowhere been considered whether the supervenience of the social on the individualistic might offer explanatory insight into the social level, nor whether it might suggest new or better methods for understanding the social sciences. The concern here has been entirely with what sort of relation can be said to hold between social and individualistic levels of phenomena.

In this respect, the discussion of reduction might be criticised for being incomplete, since reduction is most usually defended as a relation which makes both metaphysical and epistemological claims,

with the latter often deemed to be the more important. Criticism such as this, I would have to accept. In my defence, I would only comment that I make no claim to have offered a complete analysis of reduction. Reduction in this thesis has only been considered to the extent that it has bearing on a metaphysical relation between phenomena.

Even a metaphysical relation is open to criticism, though, and a few points will be raised about the value of one such relation *viz.* supervenience as considered in the bulk of this thesis. One of the strongest claims that Kim has made of the relation is that if it can be shown that two levels of properties are related by supervenience, then it follows that the supervenience base, at the lower level, must exist. In other words, if the social supervenes on the individualistic, then an individualistic base does exist. However, upon examination, this turns out to be a rather weak claim. In particular, it does not follow that the supervenience base could actually be established. Indeed, given that it may comprise infinitely long disjunctions of conjunctions, it almost certainly never will be. Even in principle, the supervenience base could not be particularly useful, since its maximal base properties will be heterogeneous and disparate. As such, they will not feature in the laws of the base level theories and will not provide explanations of the supervenient level phenomena. Yet as relata in a metaphysical relation, this is not strictly required of them.

What *is* required of them, however, is that they determine the supervenient level phenomena, to the extent that there could be no change at the supervenient level without some change at the base level. Moreover, this should be reflected in a claim for the priority of the individual over the social. But does supervenience achieve this? Yes and no, I would claim. It has been shown that necessary coextensions can be established between the base and supervenient level for each social property. In this respect, every social change must be accompanied *i.e.* will be accompanied in every possible world, by some individualistic change. Davidson's initial challenge to a formulation of supervenience has been met. But is this enough to show that the base level determines the supervenient level; do individuals determine social phenomena? The answer which supervenience offers to this, if affirmative at all, is admittedly only weakly so.

In considering the application of supervenience to the socio-individualistic relation and its subsequent generalization, it was conceded that the supervenience base would need to make reference to the supervenient level. In this respect, the supervenient level could never be eliminated; furthermore, the base could never be formulated without it. Which individualistic properties to include in the base could only be decided once it was agreed, for any social property, which social roles needed to be fulfilled before the property was instantiated and also, which individualistic properties needed to be instantiated in order for the roles to be fulfilled. But these individualistic properties would have nothing

individualistically significant in common. The only common link between them would be that they in fact instantiated the social roles in question which in turn constituted the instantiation of the social property.

Largely the same claim was made in considering how supervenience could be generalized. This was achieved by looking to the members of social institutions. But always, the individuals and their individualistic properties which were to constitute the individualistic base were picked out in virtue of fulfilling the rules of membership and the roles of members. These rules and roles provided the social and normative context in which the individuals' actions were taken to determine the supervenient actions or the properties of the supervenient institutions. Yet it could never be claimed that the social and normative context could be specified individualistically.

In what sense, then, can supervenience be claimed to support the priority of the individual over the social? This claim can only be made in the following very weak sense: without individuals, there could be no social entities. Social entities could not exist without individuals, they could not act without them and they could not change without them. The converse claim does not hold: individuals could exist, even though there was nothing social about them. They could act and change without any social entities doing likewise. This much at least has been defended in this thesis as a consequence of the relation of superveniece. However, this is not

to endorse the claim that they could exist/act/change in all the ways in which they now do, without social entities.

There is one final issue which I would like to raise. It may be objected that my discussion of the application of supervenience to the relation between social and individualistic phenomena is rather dogmatic. At no point is much consideration given to other accounts which directly oppose the application of supervenience to this relation. Arguments against supervenience are rather scarce in this thesis. Again, such an objection would have to be accepted, with the following word said in my defence. In this thesis, I have intended to characterise some different possible relations which could be claimed to characterise the relation between social and individualistic phenomena. To this end, reduction, determination and supervenience have been considered. It has then been my intention to see whether or not the relation of supervenience, which seemed to be the most promising, *could* be applied to the socio-individualistic relation. Consequently, in Chapter 4, I was expressly concerned to apply the formulation developed in Chapter 3 to the socio-individualistic relation. I was not concerned to defend this relation against other possible candidates.

Throughout the thesis, the force of the argument has only been to see whether or not supervenience *could* be applied to the socio-individualistic relation. I believe that I have shown that it can be. It has not been argued that supervenience in fact offers the best characterisation of this relation, nor that it offers a better

characterisation than any alternatives which might be defended. Indeed, as evidenced by the caveats raised in this conclusion, it is unlikely that I would wish to defend such a position. But I hope that will not be taken to undermine the value of this thesis.

Supervenience has increasingly crept into the philosophical vocabulary of the 1980's. Some, *e.g.* Watkins and Ruben, have expressed doubts about its potential contribution to the philosophy of the social sciences. However, in philosophy of mind, it seems likely to be a fixture of some permanence and in this respect at least it has seemed to me worth seriously considering its application to the socio-individualistic relation. Most importantly, supervenience accords with the general spirit of materialism which I think I am correct in taking to typify many areas of philosophy at present. In its application to the socio-individualistic relation, it makes it possible to be receptive to this trend, without regressing into the well-worn and stubborn arguments of the past two decades for reduction.[1]

NOTES

CHAPTER 1

1. Note that my interest is whether or not the reduction could be obtained *i.e.* whether it would be possible in principle as well as physically possible to reduce T2 to T1, rather than whether or not T2 actually has been, or will be, reduced to T1.
2. The force of arguments against the tenability of a theory-observation distinction is perhaps best captured in [Maxwell 1970].
3. This point is developed in some detail in [James 1984:27].
4. In the following discussion of the Condition of Connectability it would be impossible to acknowledge point by point the debt I owe to the late Ian McFetridge. Most of my ideas on the topic were influenced - some to a greater extent than others - by his 1985 lecture series, "Reduction and Physicalism". Of course responsibility for the ideas as expressed here rests with me.
5. It should be noted that the sense in which Lewis construes T-terms as names is not the same as the sense in which Causey uses names. For Lewis, the name of a property is a singular term, while for Causey, who claims that thing-predicates function as names, names apply to any grammatical predicate. For instance, Causey would accept 'electron' as a name, while Lewis would use it in the form 'electronhood'.

6. It is perhaps worth noting that Lewis' criteria for the identity of properties are in a sense overdetermined. Not only are properties defined in terms of their causal roles, Lewis asserts that they may also be defined in terms of modal operators and possible world semantics. According to the latter criterion, a property may be identified by a function from a domain of possible worlds into a range that is the set of all objects which have the particular property in question in each possible world. So to say that two properties are identical, is to say that they are coextensional in every possible world *i.e.* properties F and G are identical iff $\Box\forall x(Fx \equiv Gx)$. The difficulty with this is that the modal operator destroys the empirical nature of the correlation. The coextension in the actual world can be empirically justified, but the extrapolation from this to all possible worlds is not capable of such justificaton. Consideration of these claims leads into the minefield of philosophical literature on the epistemology of necessary *a priori* and necessary *a posteriori* truth. It is not clear how a discussion of this would benefit the present analysis of reduction, so I propose to bypass such considerations and concentrate on the identification of properties in terms of their causal roles.

7. For a detailed consideration of INUS conditions, see [Mackie 1980:62].

8. More general reasons for doubting that social entities can be identified with individuals at all have been developed in depth by David Ruben [Ruben 1985]. Since Ruben's arguments are

extremely comprehensive and I am largely in sympathy with them, I have nothing original to contribute to this particular aspect of the debate. Therefore I do not propose to enter into a discussion of his position.

CHAPTER 2

1. I am grateful to David Ruben for his help in clarifying the issue with this clear, common-sense example.
2. Hellman and Thompson's proof that the definitional claims do not entail the exhaustion of one level of phenomena by the other is not considered in detail. This is for two reasons: first, their own exposition [1975:557] is perfectly clear. Second, for our purposes, the converse claim *viz.* that physical exhaustion does not entail reduction, is far more significant and this has been discussed at some length.
3. It may be objected that at this point I should have considered the discussion that Hellman and Thompson's position has raised among other philosophers in the literature. This was indeed my intention. However, although the paper is referred to in the literature [*e.g.* Macdonald and Pettit 1981:184 and Currie 1984:350, note 1], it is not, to my knowledge, discussed in depth. I can only assume that this is because the argument is seen as technically difficult and sophistical.
4. An analogous position which endorses virtually the same claims as Hellman and Thompson, is the token physicalism defended by Jerry Fodor [Fodor 1981: Ch.5]. Fodor argues that there will

not be neurological natural kinds which are coextensive with each psychological kind, or if there are then the coextensions will not always be nomological. However, consistent with this, he argues in favour of the claim that "every event which consists of x's satisfying S [a kind predicate in the higher level science, say psychology] is identical with some event which consists of x's satisfying some or other predicate belonging to the disjunction P_1 v P_2 v ... v P_n [where P is a predicate in the lower level science, say neurology]." [Ibid.:139]

5. My attention was drawn to this point by Paul Teller in a seminar at Cambridge University during the Easter Term of 1988. The particular seminar was called, "Subjectivity and knowing what it's like," in as series organized by Hugh Mellor on the Philosophy of Psychology.

6. If the introduction of natural kinds into the definition of laws is considered unpalatable, then, in what follows, 'bridge laws' can always be taken to reflect laws, since that is what true empirical generalizations must be. To try to settle such a long-standing dispute here would not aid the argument of the rest of the chapter.

7. This is perhaps too strong, since Daniel Dennett has only recently produced such a theory of intentional states [See Papineau 1988]. Moreover, this work does not appear in a vacuum, since others such as Patricia Churchland and Paul Churchland are contributing to this field as well. A weaker version of the argument could run as follows: there is

currently no generally accepted theory of intensional mental states on the basis of which psycho-physical laws can be supported. Furthermore, even if an account such as Dennett's proves to be able to withstand criticism, it offers not so much a theory which can provide particular laws between, say, the desire for chocolate and some neurophysical state, but rather an insight into how states of desire generally might relate to neurophysical states. Moreover, it is unlikely that such acccounts will appease critics such as Thomas Nagel, "who feel that the whole approach is blighted by its failure to say anything about consciousness." [Ibid.:911]

CHAPTER 3

1. The B-maximal properties which Kim uses are the strongest, consistent properties which can be constructed in the supervenience base, *i.e.* they include *all* the properties the object in the domain has and *all* the complements of properties it lacks. The motivation for this is not immediately clear. Perhaps some of the difficulties which arise for the maximal base properties could be avoided if the base properties were somehow restricted to only those base properties required to instantiate each particular supervenient property. I think the answer to this lies in the fact that supervenience aims to capture the relationship between two complete levels of properties, rather than between a few isolated properties. Kim's reasoning could thus possibly be that there is no hope of

all supervenient properties together being determined by, or supervenient on, anything less than the entire range of properties in the supervenience base.

2. I am grateful to Peter Milne, firstly for drawing my attention to this issue and subsequently for helping me to formulate the difficulty precisely.

3. The distinction between reduction and supervenience will be considered again towards the end of Chapter 4. D.H. Mellor [1982] has argued specifically that the supervenience of sociology on psychology entails the reducibility of sociology to psychology. A discussion of this would thus seem to be more appropriate in the context of a general discussion of the application of supervenience to theories of social and individualistic phenomena.

CHAPTER 4

1. It has been pointed out to me that 'Queen of England' is a misnomer and should be extended to 'Queen of England, Scotland and Wales'. For ease of exposition, please bear with the original formulation!

2. The fact that the social correlation is assumed to be derivable from psychological theory, purely on the grounds of the supervenience of the social on the psychological, seems to pinpoint the place at which Mellor's initial claim that supervenience does *not* entail reduction is renounced.

3. Further support for supervenience as a non-reductive relation may be drawn from David Ruben's distinction between strongly social and weakly social properties.

> "A social property is strongly social when some of the associated beliefs and expectations have propositional objects involving a *social* action type." [Ruben 1985:123]

I would agree with Ruben that strongly social properties

> "strike us as most characteristic of what social life is like". [Ibid.:126]

In particular, the supervenient example used in this chapter, *viz.* the social property, 'being Queen of England', is an instance in point. It was shown that this property supervened on individualistic properties which captured both the physical actions and the psychological states of the people involved when various aspects of the social property *viz.* the diverse social roles associated with it, were instantiated. These psychological properties in the individualistic base were generally the beliefs of individuals when the social property was being instantiated *e.g.* the belief of Margaret Thatcher that Elizabeth II is Queen of England, when the former is invited by the Queen to form a government. Such a belief has been included in the individualistic base as it is the belief state of an individual. Yet, that psychological state in turn presupposes other social properties, relating to the monarchy and governments in this instance. This is a clear indication that even if the social properties can be identified (in the weak sense provided by the necessary coextensions of supervenience) with individualistic properties, the identification could not be reductive

"because at least some of the mental properties associated with the application of each such social property must themselves be beliefs or expectations about the instancing of strongly social action types." [Ibid.]

CHAPTER 5

1. This claim will be compared with the previous claim for asymmetry when Currie's position is systematically evaluated below.
2. This must be close to what Emile Durkheim had in mind when he argued in favour of holism on the basis of the force which social entities were able to exert on the individual. The individual is constrained by the rules of an institution. Yet this does not entail that the force of the institution is in some way autonomous, since the rules are entirely dependent for their existence on the decisions and actions of individuals prior to and during the formation of the particular institution. In the first instance, the rules must be proposed and adopted by individuals.
3. On this issue, Tuomela's analysis is not unique. He is not the first to characterize the social in terms of individuals and their mutual beliefs. A similar account has been worked out in detail by D.-H. Ruben in which social properties are analysed in terms of nested systems of beliefs and expectations among individuals. [Ruben 1985: Ch.3]

CONCLUSION

1. Sam Fendrich, a fellow graduate student at the LSE, remarked that 'supervenience' really ought to be used to refer to the new range of public conveniences which require the payment of 10p before use. Could one dispute that?

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