

KANT  
and  
TRANSCENDENTAL REALISM

Jay Bernstein

PhD  
University of Edinburgh  
1975



"If...we ask, first, whether there is anything distinct from the world, which contains the ground of the order of the world and of its connection in accordance with universal laws, the answer is that there undoubtedly is."

Kant

"But to recognize the real essence of matter, the primary, inner sufficient ground of all that necessarily belongs to matter, this far exceeds the capacity of human powers. We cannot discover the essence of water, of earth, or the essence of any other empirical objects."

Kant to Reinhold 12.5.1789

## PREFACE

There is a general problem about the relation between thought (language) and reality: Is it language (thought) which (categorially) structures reality, or is reality the source of the (categorical) structures of language (thought)? Does language simply reflect the categorial structures of the world, or is language the source of those categorial structures? In recent times this problem has tended to be passed over in favor of more pristine analytical enterprises. The cause of this pattern of evasion likely derives from a certain, not altogether accurate, reading of Wittgenstein's later writings. Whatever the reasons are, Kant scholars have followed suit, and this has led them to evading, playing down, and even playfully readjusting Kant's doctrines concerning things in themselves, and his theory of transcendental idealism.

In a recent article on the copernican methodology of Kant and Wittgenstein, Hubert Schwyzer (1973) notes the failure of recent analytical philosophers to come to terms with the problem of the grounds for categorial claims -- a problem which I shall argue is coextensive with the problem of the grounds of objectivity generally. In particular Schwyzer chides Strawson for evading this question in his Kant book. Thus Schwyzer complains (page 206 of his article):

One cannot but suspect that Strawson has failed to see not only that Kant's conceptual inquiry is concerned with the question of what is the relation of thought to reality, but also that this is a question to be concerned with. How could Kant, and

how can we, be satisfied with the "analytical enterprise" alone, with, for example, the claim that there must be substances and attributes in our experience...unless we are clear about the status of that claim? If we are claiming that this is how the world must be because this is what our concepts are like, then we must, surely, face the question of how it is possible that we should draw conclusions about how the world must be on the basis of facts about our concepts. To this question Descartes has one sort of answer, Kant and Wittgenstein have another. It appears that Strawson evades the question altogether.

Schwyzler ends his article by saying that "Kant's general question 'How is a priori knowledge of objects possible?', is a genuine one. It seems to me that we must answer it, either with Kant or dogmatically against him." In this essay I will attempt to show that this problem really was a concern of Kant's, and I shall attempt to answer it dogmatically against him.

The problem at stake is truly an obscure and difficult one, especially in Kant's hands. If I knew when I began writing this essay what I know or think I know now the whole of what follows would be a great deal shorter and more briskly presented. The fact of the matter is, however, that I didn't fully understand the issues involved when I began, and I do not think that those writers who have bothered paying attention to this problem have understood it either. For example, my concern here is not simply with the problem of the possibility of transcendental deductions because more than the categorial features of reality are at issue. Only for Kant or the Kantian is the separation between the objective validity of categorial and empirical concepts ultimate; for

Schwyzzer's dogmatist both types of concepts require similar treatment. Thus my identification of the problems of the origin of categorial concepts and their objectivity with the problem of the grounds of objectivity generally. Again, there is a problem about categorial concepts in the context of judgment, on the one hand, and in the context of science (theory) on the other. Arthur Melnick, in his recent book Kant's Analogies of Experience, provides an interesting defense of transcendental idealism based on an analysis of the employment of categorial concepts in judgment. He fails to show how his analysis could be generalized to demonstrate the ideality of those same concepts in the context of scientific theories; nor do I believe that such a generalization is possible. Altogether then, the problems here are both more difficult and more wide ranging than they might at first appear.

I should not wish to claim that I have solved these problems either to my own or to anyone else's satisfaction. The most I can hope to have achieved is to have provided a map of these problems within Kant's system as a whole. And this is not an accomplishment I can claim to have achieved all alone. My thinking on these issues has been influenced by Gerd Buchdahl's attempts to illuminate the levels of theory in Kant; by John Silber's writings on Kant's moral philosophy; and by the recent turn towards realism amongst a number of anglo-saxon

philosophers, especially, Sellars, Putnam, Harré, Wiggins and Butchvarov. My decision to place all references to primary sources in the body of my text and place all references to secondary sources in end notes is by no means meant to hide these debts; only to provide an easier reading text.

I should like to acknowledge the help I have received from my supervisor, Professor W.H. Walsh, whose wide knowledge of Kant saved me from making numerous errors of interpretation. Also I should like to thank, each in their own measure, Gary and Joanne Soroka (polumetis); Wanda Lankenner; Barry Richards; and Larry Briskman. I am also grateful to Mrs. Irene Taylor for her efficiency in typing this manuscript.

J.M.B.

12.5.75

## CONTENTS

### Part One: Onto-Theological Problems of Transcendental Idealism

#### I Introduction

#### II Transcendental Idealism and Ontological Diversity

- A. Freedom and Causality
- B. Mechanism and Teleology

#### III Objectivity and Idealism

- A. Dilemmas of Lockean Realism
- B. Kant's Transcendental Interpretation of the Theory of Ideas

#### IV Science, Ideas and the Unconditioned

- A. The Perspective of Science
- B. The Unconditioned
- C. Matter as the Unconditioned

### Part Two: Science, Realism and Essentialism

#### V From Judgment to Science

- A. Essentialism, Semantics and Ontology
- B. Modal Progressions

#### VI Science and Ontology

- A. Foundations and the Blueprint for Science
- B. The Ontological Reduction: Forces
- C. The Ontology of Causality

Kant Texts and Abbreviations:

I have used the Kemp Smith translation of the Critique of Pure Reason, and followed the usual practice in referring to the first and second editions.

CPrR = Critique of Practical Reason. Tr. Lewis White Beck. Page references to Akademie edition.

M = The Metaphysic of Morals. Tr. Mary Gregor. Page references to Akademie edition.

Gr = Groundwork of the Metaphysic of Morals. Tr. H.J. Paton. Page references to Akademie edition.

C.J. = The Critique of Judgment. Tr. J.C. Meredith. Reference by paragraph number.

Intro = "Introduction" to C.J. Tr. J.C. Meredith. Reference by paragraph number.

F. Intro = "First Introduction" to C.J. Tr. James Haden. Reference by paragraph number.

Prol = Prolegomena to any Future Metaphysics. Tr. Peter G. Lucas. Page references to Akademie edition; otherwise by paragraph number.

MFNS = Metaphysical Foundations of Natural Science. Tr. James Ellington. Page references to Akademie edition.

ID = "The Inaugural Dissertation" of 1770. Tr. G.B. Kerferd and D.E. Walford. Reference by paragraph number.

OAD = "On a Discovery According to which Any New Critique of Pure Reason Has Been Made Superfluous by an Earlier One". Tr. Henry Allison. Pages references to Akademie edition.

## Other Texts:

Religion Within the Limits of Reason Alone. Tr. T.M. Greene and H.H. Hudson. Harper Torchbooks, New York. 1960.

Kant: Selected Pre-Critical Writings. Tr. G.B. Kerferd and D.E. Walford. Manchester University Press, Manchester. 1968.

Philosophical Correspondence 1759-1799. Tr. Arnulf Zweig. University of Chicago Press, Chicago. 1967.

For John Locke:

E = An Essay Concerning Human Understanding. References by book, chapter and paragraph, in that order.

For Martin Heidegger:

KM = Kant and the Problem of Metaphysics. Tr. James S. Churchill. Indiana University Press, London. 1962. Reference by page number in this edition.

**Part One**

**Onto-Theological Problems of Transcendental Idealism**

## Introduction

1. One of the central aims of the Critique of Pure Reason is to defeat the claims of transcendental realism. Transcendental realism is the thesis that the (known) world exists as an absolute (unconditioned) totality, or that there exist within the world necessary (unconditioned) entities. Let us agree that the central positive aim of the First Critique is to articulate the nature of human knowledge by showing what features any comprehensible world must possess. Given this, why should Kant have thought himself duty bound to refute transcendental realism? We could reasonably expect the nature of objectivity to be explicated and the categories defended without reference being made to the question of whether or not there exist unconditioned totalities or unconditioned entities; and we could further reasonably expect the resulting analysis of objectivity to be neutral with respect to the problem of the existence (in the known world) of such entities or totalities. If Kant's critique of transcendental realism and his correlative claim that we know appearances only and not things in themselves are not to dissolve into philosophical irrelevancy, then we must find some interpretation of his theories here which has significance for his general theory of knowledge.

I shall contend that the point where transcendental realism comes into conflict with the claims of transcendental idealism is over the problem of the grounds of objectivity. Thus transcendental idealism can be expressed as the thesis

that the grounds of objectivity reside in the knowing subject. The subject contributes to the knowing situation those (categorical) features of it necessary to secure the possibility of objective judgments. In opposition to this the transcendental realist wishes to argue that the grounds of objectivity reside in the nature of the object known.

If the grounds of objectivity reside in the nature of the knowing subject, then, again, those features of experience which provide for the possibility of the objectivity of the judged object are contributed to the cognitive situation by the knowing subject. To say these features of experience are transcendently ideal is simply to say they are ultimately ideal, or, connecting our epistemological and ontological locutions, they exist only for subjects knowing objects. If the grounds of objectivity reside in the nature of the object, then it is assumed that the object will possess those features which make knowledge of it possible whether or not there exist knowing subjects.

Both these theories (transcendental idealism and transcendental realism), then, can be interpreted as attempts to provide an answer to the question: Under what conditions is knowledge possible? Although there is a temptation, usually unresisted, to identify transcendental realism with a rationalism of the Leibnizean variety, I shall contend that such an identification is unnecessary.

Now this interpretation of the significance of Kant's attack on transcendental realism directly implies an inter-

pretation of his doctrine that we know appearances only and not things in themselves, namely: we know things in accordance with their appearances only, and not in accordance with their essences. This is the central historical thesis of this essay. If it is correct, then those contemporary interpretations of Kant which attempt to excise the problem of things in themselves from his theory, or simply ignore the metaphysics of transcendental idealism and concentrate on Kant's epistemology, are guilty of evading a central theoretical problem which Kant's theory was constructed to solve. Neither Kant nor his predecessors would have been satisfied with a list of those minimum conditions which must be met if knowledge is to be possible; they would all have asked whether these conditions are in fact met, and if so how are they met? It is these latter two questions which raise the problem of the grounds of objectivity. Questions about the grounds of objectivity are questions about its source or origin. Thus when the essentialist talks about the grounds of objectivity, he will invariably discuss the nature of physical objects, and under what conditions we can have complete knowledge of them -- if, that is, complete knowledge of them is possible for us. Neither Locke nor Leibniz, the two essentialists Kant is most concerned to refute, believed we could have knowledge of things in accordance with their essences. To say this, however, is not to say that either of them ever meant to deny that it was the essence or nature of particular things which accounted for their manifest properties, and thus of the order of things in relation to one another. Kant of course

also thinks that we are unable to know the essences of things, but for him this does not entail any lack of knowledge about the grounds of objectivity. Knowledge of the grounds of objectivity is transcendental knowledge for Kant, and within empirical reality there are no essential properties of things to be known. For Kant, therefore, knowledge of grounds must be transcendental knowledge. This is in sharp contrast to essentialist theories such as that of Locke for whom knowledge of grounds is ideal scientific knowledge.

The denial of the significance of Kant's doctrine concerning things in themselves amounts to a refusal to answer the question whether it is things or our ways of thinking about them which accounts for the existence of a world order. Kant plainly thinks it is the latter: "(appearances) as mere representations...are subject to no law of connection save that which the connecting faculty prescribes" (B 164). It is this claim, read in a non-skeptical way (since Kant evidently believes objective knowledge generally, and a science of nature in particular, are possible), which must be defended if Kant's theory is to be in any way acceptable. The central philosophical contention of this essay will be that Kant's position is false and that some (vaguely Lockean) form of essentialism ought to be embraced.

2. Chapter II: Did Kant really believe that the categorial features of things necessary to make knowledge possible were contributed to the cognitive situation by the subject? And even if he did believe this, can it be shown that such a theory entails a rejection of essentialism? Is there any *prima facie* evidence which does not presuppose the terms of the theoretical framework I am arguing for which would lead one to give affirmative answers to these two questions? At the level of *prima facie* plausibility I believe such evidence does exist; it can be found in Kant's attempts to reconcile transcendental idealism with the existence of human agents and living organisms.

Consider the essentialist position here. Different kinds of objects have different natures or essences making them the kinds of objects they are. To know these objects as they are, as things in themselves, would require us to know them in accordance with those natures or essences. If, as the transcendental realist contends, the grounds of objectivity reside in the nature of the object, then different kinds of objects will require different sorts of concepts and principles -- expressive of their essences -- for their cognitive apprehension. Apart from some reductionist programs, it is usually conceded that the predicates 'is a person', 'is an organism', and 'is a material object' have, as constitutive predicates, unique extensions because they range over unique kinds of entities. In fine, these three complex sortal predicates are usually taken as irreducible to one another because they express

the existence of ontological diversity within the world.

What I attempt to argue in Chapter II is that Kant's struggles with the problem of freedom in his moral philosophy, and with the principle of teleology in his discussion of living organisms evidence a real inability on the part of his theory to either countenance or account for ontological diversity. On my interpretation of the situation, this falls out as a natural consequence of transcendental idealism. Since the grounds of objectivity rest on the nature of subjectivity, the range of our ontological commitments are restricted by the limited forms of human subjectivity. If the forms of human subjectivity create the ontological horizon within which objects can be known, then, to condense Kant's complex argument, the complex sortal predicate 'is a material object' is equivalent with the epistemic predicate 'is a possible object of experience'. And this naturally rules out any objects falling under other sortal predicates from being objects of experience. Not only is Kant's position here extremely counter-intuitive, but his actual analyses of moral agents and living things are not compatible with their exclusion from empirical reality. In order not to beg the question at issue, my actual presentation runs from Kant's analyses of moral agents and living organisms to the problem of ontological diversity. Only in Chapter V do I attempt to regiment these analyses to the theoretical framework of essentialism.

3. Chapter III: The purpose of Chapter II is simply

to create prima facie plausibility for my interpretation of Kant's system by showing a few of the obvious ontological difficulties he runs into through his commitment to transcendental idealism. In Chapter III I attempt to generate the theoretical framework of: essentialism (transcendental realism) versus transcendental idealism. Again, my central historical thesis claims that Kant's theory of things in themselves should read: we can know things only in accordance with their appearances and not in accordance with their essences. This interpretation of Kant's theory can be derived from an examination of the first edition Deduction and the Fourth Paralogism once these arguments are set against the background of Locke's real essence (substance) doctrine. The Analytic of the First Critique involves an indirect attack on essentialism by way of a demonstration that the grounds of objectivity are to be found in the nature of (transcendental) subjectivity. The Dialectic carries Kant's program to a conclusion by providing independent refutations of various essentialist theories.

My first task in this chapter is to provide the relevant Lockean background to Kant's problem situation. Locke believed that the grounds of world order resided in the insensible parts of things. The texture and configuration of the insensible parts of things he called their real essences. Locke could not, however, conceive of the (necessary) connection between the real essences of things and their sensible properties. Kant, I think, took this skeptical outcome of Locke's theory as a natural consequence of the

general opacity of the relation between mind and matter. But Kant was wrong in thinking that the connection between essence and sensible property must be opaque -- at least in the same sense in which the relations between mind and matter are opaque. In Chapter VI I shall show that Locke's skepticism results solely from his commitment to atomism. An atomistic universe is simply too ontologically impoverished to support an essentialist metaphysics, and hence too impoverished to account for the possibility of objectively valid knowledge. The connection between mind and matter may be inscrutable, but the connection between physical essence and sensible property need not be. Nonetheless, as it stands, Locke's theory does end up in skepticism; his transcendental realism devolves into transcendent realism, where the grounds of objectivity reside outside the reach of human knowledge. Locke's entrapment behind the veil of perception gives us a skeptical version of transcendental idealism: we can know things only in accordance with their sensible appearances and not in accordance with their real, physical essences. But if this is the case, how can we justify the objectivity of our knowledge of appearances?

It is this skeptical dilemma of the Lockean theory which provides Kant with his opening gambit. The Transcendental Deduction (in A) and the Fourth Paralogism show Kant's theory to be a transcendental interpretation of the Lockean theory of ideas. We can justify the objectivity of our knowledge of appearances because world order comes not from the real essences of things, but from the transcen-

dental unity of apperception. Transcendental idealism results from Kant's attack on essentialism as a solution to the problems of objectivity. It is the defining, essential predicates of human subjectivity (space, time, and the categories) which ground (the possibility of) human knowledge. Thus although we know appearances only, as in Locke, our inability to know the things themselves has no skeptical consequences since transcendental knowledge of the conditions which make knowledge possible functionally replaces Locke's ideal scientific knowledge of real essences. This is the bold and ingenious center of Kant's theory.

Unfortunately, Kant's position is full of flaws. He cannot account for the data of human knowledge, what it is we come to know through judgment. More importantly, the possibility of a nature in general does not entail the possibility of a science of nature; that is, those conditions necessary for the possibility of experience do not entail the existence, even in principle, of necessary relations amongst the objects of experience. Thus the salvaging of the principle of causality does not salvage necessary physical laws; but it is the possibility of the latter which Kant requires if he is to defeat Hume. In retrospect this result is unsurprising. What Kant needs in order to defeat Hume is an account of natural necessity, but the only sort of necessity licensed by his theory is epistemic necessity.

4. Chapter IV: The argument of Chapter III is that the Aesthetic and Analytic jointly attempt to show how the conditions necessary for the possibility of experience can

be injected into experience by the knowing subject, and claims that this move of Kant's makes perfect sense when it is considered against the background of Lockean essentialism (not to mention Leibnizean monadism). Kant's philosophy of science tells an altogether different story. There, rather than rejecting the claims of essentialism, it looks very much as if Kant presupposes the truth of the essentialist position. His philosophy of science requires that theories be placed into a hierarchial system in order that we be able to conceive of their holding with necessity. Physical necessity, as opposed to intentional necessity, comes about through the relation the conditioned objects of the phenomenal world (of appearance) have to their unconditioned ground or source. The truth of transcendental idealism thus comes to turn on the thesis that knowledge of the unconditioned is impossible rather than on the claim that unconditioned entities are unnecessary in order to account for the possibility of objectively valid knowledge. About the unconditioned Kant considered two possibilities: either the world exists as an unconditioned totality (the theories of absolute space and time, which Kant thought entailed pantheism), or there exists within the world unconditioned, necessary entities (monads or atoms). In the Dissertation Kant agrees that there must be unconditioned entities (God or monads), but denies that such entities can be known. Only ontologically conditioned entities in causal interaction are knowable. An unconditioned entity cannot be in causal interaction with other entities since this would entail it being, in fact,

conditioned. This argument is false. The fundamental forces of repulsion and attraction postulated in the Metaphysical Foundations of Natural Science are unconditioned, and none of Kant's attempts to demonstrate their ultimate ideality succeed.

5. Chapter V: The failure of Kant's attempt to refute transcendental realism (essentialism) has important consequences for the rest of his theory. The problem of the objective validity of the categories is the problem of whether there exist those features of the world which ground objectivity. Kant's failure to demonstrate the truth of transcendental idealism shows that such questions cannot be answered a priori. Just as science can show that the concepts 'water' and 'gold' have determinate extensions by discovering the real essences of water and gold, so science must be able to validate the extensions of the causal and teleological frameworks. The principle at stake is the same in both cases: determining the extension of a term is equivalent to seeing if that term is objectively valid. Since the epistemic necessity of a concept is not sufficient to establish its objective validity, it follows that we require an account of natural or physical necessity to complement the theory of real essences.

6. Chapter VI: The fact that only science can demonstrate the objective validity of the categories, that is, show the categories are not only epistemically necessary, but physically necessary as well, requires us to recast the Principles of Pure Understanding into a blueprint for a future, realistic science. We must show, then, what

sort of science could refute Humean skepticism if Humean skepticism is to be defeated at all. Hume's ontology, like Locke's, is itself 'skeptical' in that it cannot support the causal relations it requires. What Kant's Analogies of Experience really adumbrate is what an adequate ontology would be like; what sort of theory of objects, what ontology could support our judgmental and inductive practices. The exact nature of this new ontology is, however, extremely difficult to specify.

## Transcendental Idealism and Ontological Diversity

## A. Freedom and Causality

"Only the desire to avoid needless conflict in an essay too brief to allow for adequate defense prevents my saying that spontaneity is the ontological foundation of both rationality and freedom in Kant's system." John Silber

1. If nothing can be known but what is in causal interaction with other things, then the known and knowable world must be co-extensive with the world of causally determined objects. If that was all the world there was we would be unable to give a coherent account of ourselves as moral agents. What I will attempt to show here -- too briefly, though I hope adequately for the purposes at hand -- is that the theory of freedom in Kant's moral philosophy, which he thought he had made 'room for' through the phenomena/noumena distinction, and which is generally regarded as the pivotal philosophical motivation for that distinction, itself demands that the dualism be eliminated. The central difficulty with the distinction between phenomena and noumena is that it only functions as a place-holder for a real difference between two ontologically different kinds of objects: the first having force or mass (say) as its essential (constituting) predicate; the second having spontaneity as its essential predicate. Of equal importance here is the fact that the second class of objects, although constituted by possessing the power of spontaneity, possess predicates which according to Kant can only be attributed to objects in the first class.

The phenomena/noumena distinction divides appearance

from reality, but the difference between phenomenal objects and persons required by Kant's moral theory is one of kind. Different kinds of entities must be constituted by different principles or possess different essences; but there is only one set of principles with constitutive powers in Kant's system, and there are no real essences.

2. To understand the point and implications of Kant's moral philosophy is, in the final analysis, to grasp his theory of how and under what conditions the will can function properly and coherently, a view which radically diverges from the usual presentation of Kant's ethics emphasizing its supposed abstract formalism and severe legalism. In the first instance it will be important to explicate the revolutionary nature of Kant's moral theory by delineating the route by which the problem of the moral good comes to be identified with the problem of the freedom of the will. It is impossible in this context to do full justice to the detail of Kant's argument; the interested reader should consult John Silber's "The Copernican Revolution in Ethics: The Good Reexamined"<sup>1</sup>, for an elegant defense of the logical structure of Kant's argument. It is that structure which I shall try to capitalize upon here.

Kant's critique of the tradition of moral philosophy up to his own time depends upon the view that moral philosophy continually attempted to make the good an object of the will, presupposing that the concept of the good must ultimately be identical with some intrinsically valuable material concept: no material concept, Kant wishes to

argue, can serve the purpose of a foundation for morality since no material concept -- be it of: happiness, perfection, moral feeling or the will of God -- can determine the moral law, according to which the will must regulate its actions, without some irresolvable paradox or ambiguity. "Rather the moral law," Kant asserts, "is that which defines the concept of the good . . . and makes it possible (CPrR, p. 64)." What sort of thing does Kant suppose the moral law to be, then, and why must any attempt to provide a definition of the good previous to it necessarily end in failure?

Kant begins by defining practical principles and dividing them into two distinct kinds.

Practical principles are propositions which contain a general determination of the will, having under it several practical rules. They are subjective, or maxims, when the condition is regarded by the subject as valid only for his own will. They are objective, or practical laws, when the condition is recognized as objective, i.e. as valid for the will of every rational being. (CPrR, p. 19)

Human actions are possessed of a defining cognitive feature in accordance with which their opposition to mere mechanical responses to external stimuli can be characterized: in all cases they have a purposiveness or intentionality which cannot be attributed to the non-mental. Now if a practical principle is but a generic term referring to that class of all propositions containing a general determination of the will, then the will itself must be characterizable in terms that go beyond the power of agency, that is, in a way in which some cognitive factor may enter.

The will is that power of a rational being "to act in accordance with his idea of laws -- that is, in accordance with principles (Gr, p. 412)." As Kant sees it, we must draw a line not between what has the power of agency and what does not, but rather between what conforms to law -- a rock falling -- and what acts in accordance with its own conception of law: only at that juncture can the distinction between external compulsion and the internal power of agency become intelligible. As the comprehensibility of the physical world is ultimately dependent upon the law-abidingness of things, so the intelligibility of human actions is ultimately dependent upon their lawful nature. Unlike the physical world the human world has two possible sub-sets of law-forms or practical principles applicable to it: those which are subjective -- called maxims -- and those which are objective -- called laws. All actions, if we are to be entitled to call them actions, have a maxim, that is, a principle which can be identified and specified as that in accordance with which the agent himself determined to act, but not all maxims are merely subjective; some maxims are capable of an objective formulation such that they "would also serve as a practical principle for all rational beings if reason had full control over the faculty of desire (Gr, p. 401)."<sup>2</sup> Objective principles are practical laws. The moral law would thus be the summum genus of all practical laws.

No non-question-begging analytical path exists from this specification of the prerequisites of an adequate moral law to an argument saying that no material concept can

determine the meaning, significance or general content of the moral law. Rather, a number of non-trivial assumptions must be granted as to what any moral theory would be able to accomplish were it to be satisfactory. While, at least so far as I am aware, Kant nowhere makes a full defense of these suppositions, nor is it clear that he could, these points, in general, consist in a phenomenological description of specific aspects of moral experience in virtue of which that experience is identifiable as moral. Thus all that would be needed for Kant's purposes here is a general consensus amongst moral men -- an Aristotelian requirement -- that the specified characteristics were distinctive attributes of moral experience in general. The first of these is that it is in the nature of moral concern that a constraint be placed upon the will to act in a specific fashion whether or not acting in that way is consistent with what one subjectively desires (to do) at a given time. Secondly, this constraint -- called "duty" -- must not only determine one's will regardless of what one subjectively desires, but, if it is to be a moral constraint, it must also be able to be freely chosen by the agent: it must be objectively but not subjectively necessary for the agent. Together these two points are constitutive of moral obligation. Lastly, highlighting what is already implied in the first two points, moral obligation obligates with necessity, i.e., no rational being with the power to act can act without being obligated to act morally. By acting persons of necessity implicate themselves in the

net of moral obligation, and no action can thus be performed irrespective of the possibility of moral evaluation, which is not to say that there cannot be actions which, for all intents and purposes, might be regarded as value neutral, e.g., scratching one's head. To repeat: Kant's assumption is only that any moral philosophy failing in respect to these three points would thereby fail to account for those distinctive features our moral experiences do in fact possess. Once these points are granted, then Kant's argument can proceed.

With great precision Silber has summarized the problem of morality, from the Kantian perspective, for the traditional moral theorist.

...for the good to be a meaningful ethical concept it must be related to the moral agent as the obligation of the agent to embody the good in the practical principle of his will. But the good as a material concept cannot be related to the will in this fashion. For if it is related to the will at all, then the good will be related to the will either empirically and contingently, and thence without obligation; or it will be compulsive upon the will as the natural cause of the effects of the will, and hence the freedom of the will, and thereby the will itself, will be destroyed.<sup>3</sup>

The difficulty for one wishing to employ a material conception is how to bring the good in relation to the will without either destroying the will in making the relation causal, in which case it is difficult to see on what grounds we could make a person responsible for his actions (hence the importance of freedom), or in making the relation contingent, in which case it seems as if one could act without obligation, for constraint would be subject to the agent's desire or willingness to be constrained, and

necessity would thus be lost. If the good has the power of itself to determine the will, then there is no problem of morality: the good is efficacious in whatever way it is efficacious, and no question of obligation, constraint or responsibility can arise. (The paradoxes of this side of the dilemma, endemic to Calvinist theology and ethics, for example, are well known and need not be discussed here.) Alternatively, if the good does not have the power of itself to determine the will to action, and thus no necessary connection between the good and the will exists, but it is still found desirable to maintain a material conception of the good, then it will be the case that no practical law will be able to be derived: "If a conception, even though it has its origin and status in the understanding, can determine choice only by presupposing a feeling of pleasure in the subject, then its becoming a determining ground of choice is wholly dependent on the nature of inner sense, i.e., it depends on whether the latter can be agreeably affected by the conception (CPrR, p.23)." The pattern of argument at work here is two-pronged. If any and every material conception of the good must be mediated through the faculty of desire, that is, no object could determine the will non-causally lest that object, being the good, be thought desirable in itself, then contingency of a radical sort is unavoidable: what is or might be pleasurable and/or (so) desirable for one man need not, and rarely is, so for another, and is not always the same through time even for one man. The wide divergencies between what different persons find desirable entail that whatever is mediated

through desire be capable only of being made into a maxim for action and not into a practical law (CPrR, p. 21ff.), at least when the object in question is taken to be the good itself. Moreover, and this forms the second prong of Kant's argument, since all material conceptions of the good are mediated through desire it becomes impossible, in principle as well as in fact, to distinguish between moral and non-moral goods. "This sameness lies not merely in the fact that all feelings of pleasure can be known only empirically, but even more in the fact that the feeling of pleasure always affects one and the same life-force which is manifested in the faculty of desire, and in this respect one determining ground can differ from any other only in degree (ibid)." Consistent with this claim that the faculty of desire and the experience of pleasure are basically homogeneous in nature, Kant erects the experience of obligation as the fundamental fact of moral experience in opposition to that of self-fulfillment. Only where there is a firm distinction between moral and non-moral goods can we begin to account for the most ordinary aspects of moral experience: temptation, conflict of goods, obligation and, of course, the congruent experiences of freedom and responsibility. Moral problems as such can become perspicuous only in a context where what is desired need not be synonymous with what is morally right or good, and where the good is materially conceived we cannot (without arbitrariness) distinguish moral desires (desires for the good) from desires of other sorts. Desires are always desires for

the pleasurable, and what is pleasurable is as subjective and personal as anything could be.

It should be possible to extend this argument pattern to demonstrate that for any object-oriented conception of the good, either the good is coercive upon the will, removing individuals from any realizable position of obligation towards the good or towards others, or where the relation between the will and the good is contingent, it should be impossible to rid the theory in question of ethical paradoxes since moral and non-moral goods will not be able to be properly separated. Thus, for example, for the Epicureans the happy man is the virtuous man; for stoics the just man, no matter how sorrowful his lot, is a happy man. These classical aporiai will remain until a sound heterogeneity in the classification of goods can be provided, and this can only be done where goods besides those materially conceived can be found. If Kant's anatomy of moral experience is to pivot upon those conditions under which the will can function without contradiction, and it is to avoid the impasses thrown up against object-oriented moral theories, then we should be able to reach Kant's position concerning the nature of freedom and the will by reversing the path taken by those forms of moral theory thus far considered. The first reversal required is obvious: in order to prevent the will from being destroyed by its object, it must be the case that the will determine and give to itself its own object, rather than any object (whatsoever) forcing itself upon the will. A man can be responsible for his actions only where he has freely chosen to do them, but the will

cannot be free to choose the good where the good itself determines the will; thus the will and the good can stand in the relation of determined to determiner only where it is the will which determines the good. Secondly, as we have seen, where the choice of the good is conditional upon desire no practical law can be derived, and where there is no practical law there can be no experience of obligation and constraint. Obligation stems from the necessity and unconditionedness of the will's object, for only then can the will's obligation itself be unconditional. If there were no unconditional ends of action, "then all ends would be valid for practical reason only as means to other ends; and since there can be no action without an end, a categorical imperative would be impossible (M, p. 384)." The only object which a free will -- that is, a will not constrained (destroyed) by an (material) object external to it -- can unconditionally will is its own freedom: the will is not destroyed by the unconditionality of its object because the object in question is only its own freedom; at the same time, the will can unconditionally will its end because its end is just its own unconditioned willing of freedom. And this, Kant wishes to argue, is just what is required in order to account for the experience of obligation which he regards as the phenomenological center of moral experience; obligation being only "the necessity of a free action under a categorical imperative (M, p. 221)." The law morally binding the free will is just the law that demands the will perform freely; moral obligation thus

deriving from the conditions which make free willing possible.

3. To shift the grounds of moral debate from the question of which material conception of the good is correct to questions concerning the orderly functioning of the human will is indeed revolutionary, yet perfectly in accord with Kant's Copernican methodology; mind itself must be recognized as the source of law in human experience. Unfortunately Kant did not always see through to their end the implications of his own revolutionary posture. He believed, in this case, that his proposed arguments in the First Critique for the compatibility of the freedom of the will with the necessary causal relations of objects in experience were sufficient to the task of providing adequate theoretical space for the account of the relation between freedom and the will he propounds in his moral philosophy. Difficulties arise because there exists some ambiguity about what Kant has actually accomplished in his attempted resolution of the antinomy between freedom and causality, as well as through a latent and persisting indecisiveness in respect to the features which must be attributed to a will if its free willing is to provide the locus of possible moral evaluations. In general, however, I think it the case that Kant was mistaken in the first instance about what must be attributed to a free will in its functioning if his moral theory is to be valid, and he was, moreover, wrong to suppose that the compatibility argument concerning freedom and causality was adequate to its assigned task, i.e., of making room for freedom within moral exper-

ience, or so that moral experience could be possible. In the Groundwork of the Metaphysic of Morals Kant argues that though a free will does not conform to the laws of nature, it cannot for all that be wholly lawless either: "it must rather be a causality conforming to immutable laws, though of a special kind (Gr, p. 446)." This view presupposes the will is free only when it obeys the moral law and not otherwise, which would imply that a will not conforming to the dictates of the moral law, that is, not freely willing its own free willing, is not in fact free at all. Yet the point has already been forcefully pressed that moral responsibility, if it is to exist, depends upon the prior existence of a free will; again, a man cannot be held responsible for what he could not help doing. Thus if this intimate connection between a free will and a will acting under the rubric of the moral law is to be maintained, as appears to be the case in the Groundwork, there will then be no room for an account of error and evil as specifically moral phenomena. In order to supply sufficient unity to moral experience as a whole irrationality in actions must be seen as a mode of rationality, as false judgments are still judgments, or the variety of human moral experience cannot be accounted for; this, it should be recalled, was one of the main objectives Kant had set himself in proposing his revolutionary theory. Guilt and reprehensibility are as indigenous to moral experience as temptation and conflict. To carry this argument through in at least some of the detail which it deserves I shall first sketch the original

compatibility argument from the First Critique, and then show how that argument fails to account for some basic aspects of moral experience as well as some of the basic tenets of Kant's moral philosophy. I shall then outline what appears to be Kant's revised theory of the functioning of the free will as suggested by certain remarks in the Second Critique and Religion Within the Limits of Reason Alone, where Kant must be taken, however hesitantly, as coming to grips with the implications of his own position. Lastly, I shall indicate how problematic these alterations make Kant's claim that the categories are 'constitutive' of nature in general, and the inadequacy of simply adopting a 'regulative' approach to the categories.

In the Critique of Practical Reason Kant again, as he had previously done in the Prolegomena, credits Hume for instigating his -- Kant's -- critical labors. From the methodological principle that there can be no idea not first an impression of the senses, Hume argues that concepts of the necessary connection of different existing things, and those of causal connections between different existing things, are illegitimate since no impression can be found corresponding to them; only "the custom. . . of frequently perceiving certain things or their properties along with or in succession to one another (CPrR, p. 51)" justifies, or rather, excuses our use of these concepts. Hume's mistake, Kant argues, was to regard the objects of experience as things in themselves; if the objects of experience were things in themselves, then Hume would have been correct in

his analysis, since there are no impressions, that is, facts of experience, corresponding to the concepts of necessary connection and causality, and neither concept springs from Reason, properly so-called, since the denial of neither is self-contradictory. Neither concept then is a truth of fact -- no impression corresponds to them -- nor a truth of reason. Kant generates his response to Hume by denying that the objects of experience are things in themselves: they are only phenomena synthesized by rules of the understanding and the imagination. Kant goes on to defend the view that experience would not be possible at all, i.e., we could not plausibly account for the experiences we do in fact have, unless necessarily there existed a connection between different things in time, and this connection is precisely the connection whose existence Hume disputed: the causal connection between different existing things. Thus in the First Critique Kant came to the conclusion that not only was Hume wrong about necessary and causal connection, but in fact necessarily any and every possible object of experience is caught up in the causal nexus of things and events. It is here, however, that Kant's dilemma enters: if every event in the world (which we might experience) is necessarily caused by some previous event, then freedom becomes an impossibility, yet our ordinary experience of obligation attests as strongly as possible to the existence of freedom. More precisely, the structure of the Second Critique turns upon the experience of obligation as immediately attesting to the existence of the moral law as a pure fact of reason; free-

dom is then demonstrated to mediate between the concepts of the will and of the moral law (CPrR, p. 46-7). The problem is evident enough: a proper account of moral experience requires recognition of the freedom of the will, while knowledge of the physical world presupposes the existence of necessary connections between successive events for its very possibility. It is this dilemma which Kant attempts to resolve in the "Third Antinomy".

In order to make room for freedom Kant must accomplish two tasks: he must limit the apparent hegemony of causality, and he must show that the notion of a spontaneously acting cause, *ie.*, a cause not conditioned by some previous causal event, has at least some legitimate application in the world.<sup>4</sup> Towards the completion of his first task Kant argues as follows: when the argument is offered that, "when the conditioned, in the sense of some causal event, is given, the entire series of conditions is likewise given; and since the conditioned is given, then it must be the case that the unconditioned is given," we are using the concept of the "unconditioned" in different senses in the premiss and in the conclusion of our argument. Appearances are not given tout court, but only one by one in their apprehension and synthesis, so a "regress to the conditions, that is, a continual empirical synthesis, on the side of the conditions, is enjoined or set as a task (A 499 = B 527)," and in this task we are never licensed to desist from our search. What this argument implies is that causality extends only to those events which we have actually

experienced and so synthesized, but no further. This argument insures, then, that the category of causality has employment only with respect to appearances; on the other hand, since we are not given the unconditioned, and yet, as in the traditional Aristotelian argument, the series of causes must have had a beginning, we are entitled to suppose a free first cause inaugurated the causal series. Since "the power of spontaneously beginning a series in time is thereby proved (i.e., we have found a legitimate application in experience for the concept of a spontaneous cause -- JB), it is now also permissible for us to admit within the course of the world different series as capable in their causality of beginning themselves, and so to attribute to substances a power of acting from freedom (A 450 = B 478)." As Beck has rightly remarked, this argument, if it proves anything, proves too much,<sup>5</sup> for it implies that any causal event can be seen as having both a natural cause in time and a noumenal or spontaneous (free acting) cause lying outside of time. This theoretical bounteousness need not, however, detain us here.

Because time is the form of intuition holding in respect to both events in space and mental events, and, rather crudely, because the causal relation is the one which orders, connects and, in general, makes cognizable the temporal order of things, Kant justifiably identifies the temporal order of things with the causal order. This is why, in the above argument, a spontaneously acting

cause was equated with a cause lying outside of the temporal order: for a cause to be in time is only for it to be the effect of some previous causal event. Spontaneously acting causes are causes for which there exist no previous conditioning causes; through recourse to the Aristotelian argument for a first cause inaugurating any given causal series, Kant has supplied to the notion of a cause having no previous causal condition an application which might otherwise have seemed dubious. If we are to understand moral agents as both moral and as agents, then they must be considered to be essentially non-temporal beings, although this is not all they are. Men can be looked upon from two different perspectives: firstly, men are transcendental or noumenal subjects who stand outside of time and who are thus capable of inaugurating causal chains, i.e., men are free-acting agents; secondly, however, men must also be recognized as phenomenal beings who exist in time, and to whom the laws of causality apply. When we evaluate the acts of men we are taking them as things in themselves existing outside of time; when men fall off cliffs or causally interact with material entities we consider them as phenomenal things, subject to the laws of causality. As a thing in itself, existing non-temporally, a subject is determinable only in respect to laws which he gives himself, and "the entire history of his existence as a sensuous being, is seen in the consciousness of his intelligible existence only as a consequence, not as a determining of his causality as a noumenon (CPrR, p. 97-8)."

By this Kant means that for the purposes of understanding oneself as a moral being, one's entire history as a sensual, desiring being can be dislodged from its place in the natural world and considered under the rule of the moral law, that is, as the result of freely-committed acts. This thesis is not, however, in accord with Kant's two-worlds view of things. The notion of two standpoints, the noumenal and the phenomenal, derives its initial plausibility from the fact that it sharply delimits the extension of the category of causality to appearances; and this would, at least, allow us to comprehend the acting self as in some way untouched by prior causally conditioned events -- necessary causal sequences, again, being only the result of the active synthesizing processes of the mind. This view makes nonsense of moral experience because moral experience is not just a question of action: "the pilgrim's and the rake's progress are, as the word 'progress' indicates, thoroughly temporal adventures."<sup>6</sup>

Although this territory is well trodden, it is not, for all that, a trivial point about Kant's system that in its original form it cannot take account of the diversity of moral experiences. Central to the notion of action is the idea that actions interfere with the natural course of events, and bring about events or states of affairs which would not otherwise have occurred; included in this is the idea that we often desire and intend to alter and reorder the natural world in accordance with our conception of the highest good. More significant, for Kant's moral

philosophy, is the fact that the temptation of the will by desire, its decision to act, and its satisfaction or guilt are all events in time. It was for this reason I said the attempt to view the moral as a function of our ability or freedom to act outside of the temporal order made nonsense of our actual moral experiences. I do not wish to suggest Kant was by any means unaware of such 'bald' facts concerning moral experience, only that his conception of two non-interacting realms cannot begin to take account of these facts, and that therefore the "Third Antinomy" does not resolve, as Kant supposed, the problem of freedom as it arises in the context of considerations relating to the moral nature of man. Only unmitigated vanity could motivate our desire to interfere in and change a world we could not logically have any chance to effect one way or another. But if we do have the power to change the course of the world, and the world does not have the power to alter its own course -- which is not to deny that the natural course of events can and does effect us -- then there is an ontological distinction between us and the world: when we act it is one ontological realm leaking into another.

4. The spontaneity of mind is the distinguishing ontological feature of the Kantian self, for it is in virtue of the mind's spontaneity that we are entitled to call ourselves intelligences (B 158n.). Kant leaves the epistemological status of our awareness of ourselves as spontaneous beings ambiguous, since this awareness is, or at least seems to be, immediately given in or with the act of

thought, and therefore is not categorially determined (as all true knowledge must be). Nonetheless, both freedom and reason are rooted in, and are only conceivable through the fact that the mind possesses certain forms of spontaneity, and it is only the possession of these spontaneous powers that can account for the fact that reason is essentially free, and that freedom is rational. To judge, to act, to create, to appreciate artistic works, these are the basic, inscrutable and unexplainable powers of the self precisely because they are the forms of human spontaneity. The common root freedom and reason have in the spontaneity of the mind is exploited by Kant in the Groundwork, where he argues that the notion of the 'validity' of judgments presupposes freedom in the same way as does moral responsibility: if we were on all occasions causally compelled to 'think' whatever we 'thought' to be or not to be the case, then no justification could be made for distinguishing valid from invalid lines of reasoning, true judgments from false; this practice would lose its point since criticism in accordance with standardized rules or principles would always be beside that point. We should (causally) have to think whatever we thought, and that would be that. The freedom of the mind refers not only to our ability to think either x or y -- this is only a negative freedom, a freedom from external constraints; also the mind must have the positive (spontaneous) freedom to generate rules and principles -- the very forms of thought -- which give the notion of a judgment or a reason meaning or significance

in the first place. "Reason must look upon itself as the author of its own principles independently of alien influences (Gr, p. 448)." In the positive sense reason is free because the constitutive rules or norms of thought are representative of the spontaneous powers of mind; if one chose to try to think in defiance of these rules, it is not the case that one would think false thoughts; rather one would not be thinking at all.

Reasoning and thought are above all activities of the mind; to have knowledge of what is the case is to actively judge it to be so for oneself. Consistently with this contention Kant argues that historical knowledge, knowledge which is passively learnt and accepted as such does not deserve to be called rational (subjectively speaking): "Modes of rational knowledge which are rational objectively . . . can be so entitled subjectively also, only when they have been derived from universal sources of reason, that is, from principles (A 836 = B 864)." This case should be considered on analogy with that where the good is conceived to have the power of itself to determine the will to action; in that case, through the destruction of the will by the good, we rightfully refuse to call any actions so determined "moral". A man can only be responsible for his actions, and thus a moral agent properly speaking, where he can choose to do or not to do the actions in question. Similarly here: no man can be considered rational unless he can be responsible for the knowledge he possesses, and he can be responsible for his knowledge only where it is possible for him to think it for himself; thus 'parroted' knowledge is not rational knowledge for the individual con-

cerned since no effort of thought, no activity of reason was involved in its generation. If all knowledge were 'parroted' knowledge, then there would be no knowledge at all. This common ground freedom and reason have in the spontaneity of the mind makes one suspect that, besides the normative constraints placed on thought processes, there exists some higher-level constraint which regulates our adopting and acting on the lower-level constraints; that is, there is a "unity of practical and theoretical reason in a common principle, since in the end there can only be one reason, which must be differentiated solely in its application (Gr, p. 391)." I think there is more than a little plausibility in this suggestion, but cannot here hope to demonstrate in what it consists.

Now if the spontaneity of the mind does provide a common ground for both freedom and reason, then we would suppose that in Kant's moral philosophy the freedom of the self would have a specific form or structure, representable by a normative law or principle, which would thus be distinguishable from the self's freedom from external influences; that is, if the spontaneity of the self in action is a structured spontaneity, then we should expect an argument to the effect that to be free we must act in only a specified way -- in accordance with some normative principle(s) -- and if we do not act or will in the appropriate fashion our freedom will, in the long run, be dissipated: to will in any but the prescribed manner would be, literally, self-defeating. Thus Kant needs to show that there exists not only a freedom 'from', but as well a freedom 'for', and if there exists a freedom 'for', then there must exist a free-

dom 'against'. Kant identifies the freedom to choose and act against the rational grounds of freedom as heteronomy. Heteronomous actions are an actualization of our transcendental freedom -- our freedom from external causes -- but what is chosen leads in the long run to an abnegation of our powers to act freely, for what we choose in acting heteronomously is to act on the basis of our subjective desires and wants. In Religion Within the Limits of Reason Alone Kant gives scattered hints towards a theory of dispositions which could account for the possibility of a gradual diminishment in the power to act freely as a result of a pattern of heteronomous action.<sup>7</sup> Logically what Kant's claim entails is that there exists a variety of existentially self-defeating actions of the sort originally identified by Hintikka in respect to the Cartesian cogito argument.<sup>8</sup> The parallel between heteronomous actions and the denial of the cogito, ergo sum considered as existentially self-defeating performances is evident: as a result of the ontological nature of man -- as a thinking being in Descartes, as a spontaneously free and rational being in Kant -- these actions can only succeed in destroying their performer as a performer. Thus Hintikka writes:

" . . . it must have seemed to Descartes, his ceasing to think would not only mean ceasing to be aware of his own existence; it would put an end to the particular way in which his existence was found to manifest itself. To change the metaphor, ceasing to think would not be like closing one's eyes, but like putting out the lamp. For this reason, thinking was for Descartes something that could not be disentangled from his existence; it was the

very essence of his nature."<sup>9</sup> Likewise with Kant: since the rational structure of action is founded upon the ontological ground of a structured spontaneity, heteronomous actions -- in the long run -- are destructive of man's essential substance, that is, self-destructive or essentially self-defeating. One should not be sidetracked by the 'widening' of the Cartesian argument-pattern which Kant's theory calls for: men realize or fail to realize their essential nature as free and rational beings over time, and not at an instant; dispositions to act heteronomously or autonomously are concretized over a period of time, thus allowing for 'degrees' of success or failure. By taking the substance-universal 'man' to have the essential predicate of spontaneity -- typifying thus both freedom and rationality -- we can see clearly why material conceptions of the good necessarily lead to paradox: the normative structure of action is always something other than the will's own normative structure, so that in practice, at one point or another, conflict must break out. If the will is essentially rational by itself, then there is no reason to go outside of the will to find a definition of the good.<sup>10</sup>

To will in accordance with the moral law is to act autonomously, thereby fulfilling one's potential to be a free being. On Kant's view freedom and unconditional law reciprocally imply one another: the moral law is the ratio cognoscendi of freedom, and freedom is the ratio essendi of the moral law. In order to substantiate this view, upon which the self-defeating character of heteronomous

actions depends, Kant offers a two-sided analysis of the will: first, as a power to choose between alternatives (Willkur); and second, as a law expressing the rational conditions for free actions, and thus self-fulfillment (Wille). The human will as arbitrium liberum has the power to choose amongst alternative standards according to which it will allow itself to be determined. The will does not act in a standard-free context, beginning each act 'afresh' as it were, permitting the strongest impulse registered to determine it; impulses do not register on us, their strength already marked. The standard by which impulses are to be registered is itself a self-determination of the will. The "freedom of the will (Willkur) is of a wholly unique nature in that an incentive can determine the will to action only so far as the individual has incorporated it into his maxim (has made it the general rule according to which he will conduct himself); only then," Kant continues, "can an incentive, whatever it may be, coexist with absolute spontaneity of the will (i.e. freedom)."<sup>11</sup> In this way, should one choose to be motivated by greed, for example, he would nonetheless be responsible for his actions, even should he become incapable in time of acting otherwise: the disposition to act greedily resulted from an original free choice, and it is on that basis we hold him responsible for his actions. By providing access to the will for desires Kant has made the phenomenon of temptation comprehensible without making it the norm for the relation between desires, choice and action. Note at this juncture

how radically the picture of the will presupposed by the "Third Antinomy" and the Groundwork has been altered: it is, for example, now inclusive of the "faculty of desire". Thus in the Second Critique Kant says, "The determining ground of choice consists in the conception of an object and its relation to the subject, whereby the faculty of desire is determined to seek its realization (CPrR, p. 21)." Moreover, and more importantly, any pretense that the will should be considered to exist outside of time has dropped away, since the temptation and affections of the faculty of desire are wholly temporal affairs. Also dislodged from its place in the argument is Kant's erroneous claim that the moral law borrows nothing from an acquaintance with anthropology, but applies to all rational beings: the faculty of desire and the will as here considered are ineliminably species specific, and Kant's reasoning gains nothing by claiming rationality to be anything other than simple human rationality. This is not to suggest that Kant did not have any substantive reason for wanting to factor out desires and inclinations from the moral situation. He thought duty and so law always stood in opposition to inclination. And this belief followed for Kant from the observation that desires and inclinations, as causally determined, situated each agent differentially, and consequently could not by the nature of the case serve as the ground rational or reason for any action. Only the universal form in accordance with which a maxim could be ascertained to be a practical law

could serve this function. If my argument up to here has been coherent, it follows that the form/matter distinction which provides Kant with his justification for linking reason (rationality as such) with law does not capture the difference between reasons which would be good reasons for actions for only some agents as against reasons which would be good for all agents in so far as they are rational.<sup>12</sup>

The "all too human" a will of Willkür is provided with a normative structure by Wille, which represents the will's own demand for self-fulfillment. Wille is the law of freedom, the moral law which Willkür can choose to act for or against, to take up and make its maxim or not. If Willkür does choose to act upon the basis of the moral law, then the will becomes rational and reason, which here corresponds to the normative structure of the will, becomes practical. If it is the case that Wille is the presupposition of the continued and continual right functioning of Willkür, and thus the norm according to which the will can perfect its freedom, then we are saying no more than that human action is a spontaneous power so structured that its coherent and successful functioning can be accomplished only if one pattern of choice is adopted: choosing according to the dictates of this pattern represents the only possible rational grounds for action. (This does not entail that means/ends rationality is irrational, only that its continued use in disregard of the higher norm set by the moral law will become self-defeating.) Methodologically this coincides with Kant's actual practice and argument,

wherein the moral law is discovered not as extraneous to the will (Willkur), but by a regression upon the conditions of its proper functioning, and so full freedom. We do not, categorially speaking, know the moral law as that which represents the structure of the will, but it is pre-supposed as necessary if Willkur is to be conceivable at all. And this amounts precisely to my original claim concerning the relationship between morality in general and the will; and Kant says as much unequivocally.

To conceive of oneself as a freely acting being and yet as exempt from the law which is appropriate to such a being (the moral law) would be tantamount to conceiving a cause operating without any laws whatsoever (for determination according to natural laws is excluded by the fact of freedom); this is a self-contradiction. In seeking, therefore, a ground of the morally-evil in man, (we find that) sensuous nature comprises too little, for when the incentives which can spring from freedom are taken away, man is reduced to a merely animal being.<sup>13</sup>

An evil disposition is one which acts against the norm and incentive provided by the moral law; if in time the incentive of the moral law ceases to be operative, then we should not have a man before us but an animal. A man's reduction of himself to animality implies the disappearance of freedom as an operative factor in his behavior, which for Kant is the same as the disappearance in such a being of his intrinsic nature as a moral being. Such a view only makes sense if rationality and freedom of the will do mutually imply one another; and that seems possible only if both are grounded in the spontaneity of the mind.

5. It is at this juncture that the major commentators on Kant's moral theory recommend that we replace the con-

stitutive account of the categories supplied in the First Critique with the regulative account of the categories employed by Kant in his investigations into living organism in the Third Critique.<sup>14</sup> On this view the categories would not be constitutive as such of nature, but only regulative norms for our inquiry into nature. While promising, as it stands this suggestion is not quite satisfactory. The reason for dropping the rigid constitutive/regulative distinction is to prevent realms of experience lying outside the 'nature' constituted by the causal categorial framework from becoming theoretically incomprehensible with respect to their reality. The world of living things (e.g.) and the world of moral experience are as 'real' as the natural, causally constituted world but different in their organization: they are constituted by different sets of principles, by different categorial frameworks. But if the sharp difference between constitutive and regulative is dropped, then we can no longer say that the different realms of experience are differently constituted, for our sole purchase on the concept of constitution is that provided by Kant in the Analytic of the First Critique. As we shall see later, it is only qua 'constitutive' of experience that the categories have objective validity. If the categories are only regulative, then they are not objectively valid; if they are not objectively valid, then we are back where we started in the web of Humean skepticism.

In order to give substance to my contention that this is a central problematic of Kant's I will now examine an area less controversial than Kant's moral philosophy: his inquiry into the principles guiding investigation into living organisms. It will become clear as a result of this analysis that Kant believes there is only one objectively valid categorial framework, and therefore there is only one legitimate 'ontological' kind in the world. In fine, the problem of objective validity is coextensive with the problems of constitution and ontological diversity: what is (empirically) real is what is constituted by the causal categorial framework, and since no other categorial framework possesses objective validity, no other kind of entity (qua of 'that' kind) is real.

#### B. Mechanism and Teleology

6. In his letter to Henry More of 5 February 1649, Descartes has the following to say in defense of the cosmology presented in the second part of his Principles.

. . . it is more probable that worms and flies and caterpillars move mechanically than that they all have immortal souls . . . The main reason which suggests that the beasts lack thought is the following . . . Although all animals easily communicate to us, by voice or bodily movement, their natural impulses of anger, fear, hunger and so on, it has never yet been observed that any brute animal reached the stage of using real speech, that is to say, of indicating by word or sign something pertaining to pure thought and not to natural impulse. Such speech is the only certain sign of thought hidden in the body. All men use it, however stupid and insane they may be, and though they may lack tongue and organs of voice; but no animals do. Consequently it can be taken as a real specific difference between men and dumb animals.

Things either are of the sort that think, or are extended. Sensations, since they belong to animals and animals do not possess the power of speech, and so by implication the power of thought, of which speech is the only certain sign, must be of an extended nature: they are mere physiological and so mechanical responses to external stimuli, and not constitutive of a separate and unique stratum of experience, representative of some autonomous ontological level. If sensation and animal activity are reducible to or simply co-extensive with extended nature, then there is little reason to suspect more for living organisms, for biological or vital phenomena as such. Life, too, for Descartes is mechanical in nature, consisting "simply in the heat of the heart". Descartes was wrong about sensation -- noticing or being aware of a sensation is not the same as noticing or being aware of the corresponding physiological (mechanical) changes -- but his division of the world into res extensa and res cogitans was decisive for his time, and for a long time to follow. The precision and subtlety which Aristotle and Aristotelian philosophy had achieved in the philosophy of biology was lost from that time to this.

The logic guiding and regulating inquiry into biological phenomena differs in substantial ways from the logic guiding and regulating inquiry into wholly physical or material phenomena because there exists a difference in kind in regard to the objects of those inquiries: living things seem to be different sorts of entities from ordinary physical objects. Wherein lay the difference between these

two sorts of substance is difficult to say; the question is in part empirical, in part philosophical. It seems logically possible that there could be two ideally complete sciences, that of physics and that of biology, and that we should still not know if there existed a difference in respect to the objects of those sciences beyond the fact that they were explained by two different and distinctive sets of laws and theories, using different concepts and different explanatory forms. Kant recognizes that there are qualitatively unique features of living organisms as compared with physical entities, and that because of these features of the organic world we require different conceptual tools to regulate and organize our investigations into the living; but Kant is nonetheless reluctant to grant this difference between vital and mechanical phenomena ontological weight. He wants, or appears to want, to say that the difference between the two realms lies just in the fact that we use, and must use, different sorts of concepts and explanatory forms in our investigations into them. To deny that the use of different concepts and different forms of explanation implies an ontological difference in respect to the objects for which those concepts and explanation-forms are employed is a consistent but not, I think, a tenable philosophical thesis. It is regularly argued by nominalists against the existence of universals, and by those who deny that the question of the existence of universals is of cognitive significance at all. Briefly it is suggested that the concepts or linguistic usages we

employ are more distinctive of our "form of life", our needs and practices, than of any singular features of the world. Our choices and decisions about what sorts of concepts or explanation-forms to employ in this or that instance are made on a pragmatic basis, or for reasons of simplicity, parsimony, elegance, consistency, etc. To argue that in respect to one area of experience we must employ distinctive forms of explanation and still to deny that this signals something about the ontological variety obtaining in the world is more curious, for it entails admitting the world possesses 'coercive' features, while denying such coercion any ultimate cognitive significance for us, or, more tenuously, admitting such a coercion to be of cognitive significance, but denying this cognitive significance to be representative of any ontological features of the world. In Kant's case, his emphasis on the cognitive faculties of the mind, their forms and limitations, adds an extra element to an already difficult problem situation. I shall attempt to argue that on his own principles Kant cannot coherently deny ontological weight to the difference between vital and mechanical phenomena.

The fact that different logics, or different concepts or kinds of concepts are demanded by various situations in the world is (for the would-be ontologist) prima facie evidence for the existence of different sorts of objects. In specifying a use of language, or the use of a special set of conceptual tools, what is arbitrary is that just 'these' concepts are used 'here'; what is not arbitrary

is that there are such conventions at all. An interest in specific words or particular concepts (for which different words in different languages are employed, for instance) is an interest in language. An interest in the uses of language is, however, already an interest in the world. Thus the fact that various conventions control and regulate the uses of language is a fact about different sorts of situations that crop up in the world. To understand the use of certain concepts is to be familiar with a class of situations in the world; to be aware of the logical relationships between two classes of concepts is to be aware of the necessary relations which hold between two types of situations in the world; to admit the legitimacy or non-legitimacy of the extension of one class of concepts is to admit the legitimacy or non-legitimacy of the inclusion of one class of situations in the world in another.<sup>15</sup> Kant was tacitly aware of all this or he would not have exercised himself as he did over the problem of teleology. Indeed, his entire discourse on the question can be read as an attempt to deny the legitimacy of reading the situation in accordance with the dictates of the logic of the situation. Thus his argument to the effect that the conceptual differences in the explanation-forms in respect to the vital and the physical are ultimately due to the specific nature of our cognitive faculties does not reflect his lack of appreciation for the ontological problems involved. For Kant, success on these matters would be to show that the ontological problem is not an ontological problem at all; rather it is a problem of

perspective. If the proper perspective could be attained, that, for example, of an intuitive, non-discursive intelligence, then there would be no need for two different sets of concepts. This suggestion is somewhat empty since there is no reason to believe an intuitive intelligence would not perceive just what we perceive when we perceive a vital and living entity set against a lump of matter -- that is to say, two ontologically heterogeneous things. This, however, is not meant to short-circuit Kant's discussion since it is his path (argument) and not only his destination that is of interest.

In general Kant tends to believe that his Copernican turn, his epistemological outlook with its emphasis on an examination of the powers of our cognitive faculties and the conditions for knowledge in general eliminates ontological problems as problems and, more importantly, as ontological, from the philosophical fold. Through his failure to treat the ontological as ontological he ends up confusing one class of ontological difficulties with another. If it is the case that ontological problems are multifarious and not unitary, then this result might have been expected, for Kant's chosen (and over-worked) method for dealing with ontological problems is to push them into the supersensible. If there exists more than one kind of ontological problem, then more than one kind of response is called for. It will be argued that Kant's notion of the supersensible substrate of nature, while having a place in his system as a whole, cannot fulfill the function he assigns it in the present discussion. The supersensible

substrate ( = noumenon = thing in itself = transcendental object = etc. ) is plainly some sort of ontological posit; the question will be to decide what ontological function it can fulfill, what philosophical problem(s), if any, it can legitimately be regarded to solve.

7. What characteristics distinctive of living things signal the fact that they are entities different in kind from ordinary physical objects? Kant employs for the purposes of demonstration the example of a tree. In the normal course of things a tree will produce another tree generically identical with itself: in respect to its genus the tree produces itself. "In the genus, now as effect, now as cause, continually generated from itself and likewise generating itself, it (the tree) preserves itself generically (C.J., { 64)."

Secondly, Kant points out, even as an individual the tree is self-preserving (ibid.). Nothing resembling metabolic processes is to be found in the world below the level of life; in opposition to entities existing outside of and below the organic realm living things produce themselves by integrating materials into their own unique formal and functional needs. Organisms are not machines, and metabolizing systems are not reducible to combustion and energy distribution systems: both machines and organisms are "educts" in Kant's sense in that both require and make use of elements derived from outside themselves; but in the case of machines their fuel ("food") only gives driving power, allowing them to function, while metabolism represents nothing less than the constant becoming of the "machine"

itself, and this becoming is itself a performance of the "machine".<sup>16</sup> In an organism the functional unity of the whole and not its material unity is constitutive of it as an organism; thus though the criterion for material identity (through space and time) is operative for organisms since they are at least "educts", this criterion must be subsumed under one of identity for organisms because as individuals that is what they "are". As opposed to the rest of the physical environment it is the activity of self-integration that gives meaning to the term "individual" in the first place when used in reference to living organisms.

Thirdly, Kant argues, an organism generates itself by each part's reciprocal dependence upon all other parts. This postulates not only the existence of a functional unity for any organic whole, but as well the ability of any organic whole through its parts to compensate for the deficiencies of any one of the parts, or, more typically, of the ability of any sub-system or group of sub-systems of an organism to compensate for the deficiencies of any other sub-system or group of sub-systems of that organism. If this is the case, then there must exist as well a certain so-called plasticity of functioning within the organism, allowing it to achieve its goals (of survival or otherwise) by way of more than one pre-designated (according to its genus) or "eternally" designated (on analogy with physical processes) route. Plasticity of functioning does not belong or relate to any one part or group of parts, any particular sub-system or group of sub-systems of the organism, but

rather to the organism as a whole. Plasticity of goal-achievement is evidence for the functional unity of the organism; importantly for Kant's argument, this is a central facet of the organic world which requires teleological as opposed to non-teleological explanations -- if, that is, an adequate account of what an organism does is to be possible.

A few words of explication and defense of Kant are appropriate here. Because it must have priority in any philosophical discussion of the problem, let us begin with Kant's point that organisms as metabolic systems produce and preserve themselves as individuals, integrating diverse materials into the vital unity of an organismic whole. Phenomenologically, and thus from a perspective that is relatively theoretically and so metaphysically neutral, this points up a difference between the relation between object and its environment that holds, on the one hand, for organisms and, on the other, for ordinary material objects. Non-artificial material entities are indifferent to their immediate environments regarding possibilities or lacks for continued existence, which is to say, they are not in a relation of continuous dependence upon their environment for continued existence, while vital entities with their environments tend to form a continuous context which is necessary for the existence and continued functioning of the organism. The boundary of an organism is not merely the point at which it stops -- as is the case with material things in general -- but rather a significant part of the organism as a whole, which carries

it in specific ways (consider: root ends and surfaces, as against, say, the surface of a leaf or the epidermis of a man), for specific purposes, out beyond itself, and which in turn reflects 'in' again on the organism as a whole. This, we noted, gives rise to a notion of "individual", and thus of identity, which differs from that of materially persisting things:

Here wholeness is self-integrating in active performance, and form for once is the cause rather than the result of the material collections in which it successively subsists. Unity here is self-unifying, by means of changing multiplicity. Sameness, while it lasts (and it does not last inertially, in the manner of static identity or of moving continuity), is perpetual self-renewal through process, borne on the shift of otherness (Kant's "constituents . . . derived from nature" -- JB). This active self-integration of life alone gives substance to the term "individual": it alone yields the ontological concept of an individual as against a merely phenomenological one.<sup>17</sup>

There is, to state the above in minimalist terms, a difference in kind between the 'one' of a vital entity and the 'one' of some brute material entity; but is this 'descriptive' difference necessarily ontological? Are living entities essentially different in kind from material entities?

It seems clear that there is a close connection between what sort of thing an individual is and the criteria by which these sorts of things are picked out from their surrounding environment. In order to understand an expression which stands for an object, "we must be able, in Frege's vivid phrase, 'to recognize the object as the same again': we must, that is, know under what conditions some other term will stand for the same



object."<sup>18</sup> A dead man, to use a common example, is not really a "man", a human being at all; thus to ask if that is the same man I saw a week ago, where the individual concerned has died in the interim, is to use the term "man" loosely. To be able to recognize an object as the same again one must first be able to recognize what sort of thing the object in question is; but to know what sort of thing an object is is just to know what sortal or substance concept is embedded in the use of any expression referring to that 'sort' of thing. The details of this position have been firmly defended by Wiggins. He summarizes his results as follows.

If  $a=b$ , then there must be such a thing as a. In that case there must be something or other which a is. Now, since existence is not a predicate, 'an existent', does not answer the question 'what is a?' Yet since everything is something, this is a question to which there must be some answer, known or unknown, if there is indeed such a thing as a. But since a substantial or sortal predicate is by definition no more than the sort of predicate which answers this kind of question, there must automatically exist a sortal predicate f which a satisfies and some sortal predicate g which b satisfies, if a and b exist. Now if in fact  $a=b$ , then by Leibniz' Law whatever a satisfies b satisfies. So they share all sortal predicates which either of them satisfies. But then if it has any point or makes any sense at all to speak of a and b being the same something or other, of their being the same f, it must make sense to speak of the particular f which both a and b are. By Leibniz' Law, and by transitivity, it must be the same one.<sup>19</sup>

Nothing is simply an 'it', 'entity', 'thing' or 'space occupier'; if we are able to single out something, then we can do so because we know what it is to single such a thing out, and that entails knowing what sort of thing it is we are singling out. Thus we must take seriously the

consequence of this, "namely that how we do our singling out determines both what we single out, and (which is the same thing) the principle of individuation of what we single out, and (again the same thing) the conditions of the existence of what we have singled out."<sup>20</sup>

If this is correct, and the details of Wiggins' argument seem to me sound, then the 'one' of a vital entity and the 'one' of a material entity will be essentially different, that is, if, and only if, things are as they appear to be. And this, of course, does point to a gap in Wiggins' argument; things often are not (and for the epistemologist and scientist, rarely are) as they appear to be. It might well be the case, and if Wiggins is correct, must necessarily be the case that to be able to make sense of our use of names and referring expressions there must be a something which a is; but it is no good saying "known or unknown", for nothing guarantees the trueness of the presuppositions regulating our linguistic usages, and thus our commitment to essentialism does not make essentialism 'true' automatically, as it were. There does not have to be "automatically" a sortal predicate f which a satisfies; there may not be, and if there is not then we are, simply, in trouble; we cannot justify and so make full sense out of the language we do in fact use to make "sense" out of the world. In such an instance we would be in a world "off the rails", a world which escaped our cognitive grasp. We need not explore the full ramifications of such a possibility now, since we shall do so in detail later. For the present it is enough to point to

the gap existing between what we are, perhaps irrevocably, committed to and what might or might not be the case. Substance-universals or sortal concepts are not determined by or derived from logic, but are the result of our interest in picking our way through the world, and so from our interest in the world in general and in the regularities which structure and give moment to that interest. If the regularities of the world were to change, then our interests would change, and with them the substance and sortal terms by which we organize our interests.

To recapture the thread of our argument: metabolic processes are indicative of the essential nature of vital entities since they are constitutive of what it is to be a living thing. Not only can organic individuals change their material substratum, but, because metabolic processes are constitutive of living organisms, they must do so. "Its can is a must, since its execution is identical with its being. It can, but it cannot cease to do what it can without ceasing to be."<sup>21</sup> And this falls in perfectly with Wiggins' dictum that the what of a thing is not only the same as the principle of individuation for that thing, but also the conditions of the existence of the thing indicated. From this philosophical vantage point, the significance of Kant's stress upon the fact that organisms are self-productive and self-preserving in respect to their genus follows of its own accord. Firstly: the generic kind of a thing functions as, and is indicative of, a norm by which we judge what sort of thing it is we have before us. We

could not judge each kind of organism as being or as failing to be the kind it 'is' unless we admitted that generic diversity and the form (amongst other factors) by which we judge generic kind indicate real diversity amongst organisms. All organisms are self-integrating and self-preserving as individuals, but they do so in the way of their own kind, that is to say, in accordance with their own genus and/or species. In the same way in which someone would not understand what a tree was who did not comprehend that it is the same tree which loses its leaves in the autumn and sprouts new ones in the spring (the same organism, to use another example, which was a tadpole and is now a frog), so also he would fail to understand trees who did not understand that this tree here (a poplar) is the same as that tree over there (also a poplar); the two trees are the same in kind. Evolutionary theory does not, as is often supposed (and this is our second point about generic kinds), eliminate the significance of generic self-production, or reduce it to strictly causal factors. This is because the concept of adaption -- like those of "fitness", "selection", "struggle for existence" and "survival of the fittest" -- is itself a teleological or purposive concept. Adaption presupposes that we already possess a satisfactory assessment of an organism in respect to its norm (generic kind) before we go on to offer the details of the conditions of its adaption. That is, we cannot say whether or not an organism is adapted to an environment without first having genus-specific criteria indicating what successful adaption in any given instance

might be. When we say that this organism has successfully adapted itself to this environment we are saying something to the effect that this kind of thing has adopted these means to meet these specific ends in this particular circumstance. It is because there are kinds which are the norms of biological inquiry that both adaptive theories and other forms of teleological explanation become necessary; and this because these norms provide for the possibility of our inquiring into any organism in the first place. Generic kinds as norms or standards are the given, if you will, of biological investigation, the initial conditions for any biological inquiry.

Kant's last point, the parts/whole aspect of living things, is strictly continuous with the line of argument thus far presented. Parts are always parts of a whole, and while the parts are in one sense the conditions for the existence of the whole, it is the brute facticity of the whole that explains the parts in the case of living phenomena (cf., C.J., ~~65~~ 65). Aristotle, in the Metaphysics, has the following to say: "And the finger is defined by the whole body. For a finger is a particular kind of part of a man. Thus such parts as are material, and into which the whole is resolved as into matter, are posterior to the whole; but such as are parts in the sense of parts of the formula and of the essence as expressed in the formula, are prior. Either all or some of them (1035<sup>b</sup> following)." The explanatory priority of the whole to its parts is correlative to the point that it is the functional unity

of the whole which first gives sense to the notion of an "individual" in the realm of living things; the whole can explain its parts here because organic individuals are functionally unified and self-integrating wholes. Because organic individuals are the sorts (kinds) of things they are they will process raw materials in just the way they do, and thus their various parts will function as integrated and integrating members of the whole just insofar as the entity in question is successful being the kind of entity it is. Even a materialist like the genetecist Goldschmidt admits as much: "If we wish to express this factual situation by saying that a phenotypic trait is the product of action of many or all genes, we must realize that this façon de parler is nothing but a circumscription, in terms of the atomistic theory of the gene, of the unity and integration of the organism."<sup>22</sup> Atomism may be one's chosen theoretical or heuristic model, but it is the unity of the organism towards which an inquiry into the living must orient itself.

Kant showed remarkable insight in singling out these characteristics of living things as distinctive of them, for they conjointly supply an account of those features of organic individuals which would appear to characterize them uniquely as individuals different in kind from material individuals; doubtless such an account could form the essential core of an anti-reductionist explanation of biological phenomena. The above motions in the direction of an Aristotelian essentialism in respect to living things should not, however, prejudice the outcome of the

more or less epistemological considerations that follow, since, as we saw with Wiggins' account, there is a looseness and ineliminable 'gappiness' to the pure logical and metaphysical presentation of the matter, that is, it fails to answer the question: Do we know, in fact, the sortal predicate f which any particular a must satisfy? Once this cognitive space is cleared, the possibility exists of serious complications accruing to our knowledge of what a is: it must be logically possible that the f we think a is to be false; but if it is possible for any particular a not to be the f we think it is, when and under what conditions are we entitled to saying we do know the f which a is? No matter how well we fortify our metaphysical assumptions, they are, until proven otherwise, open to doubt. Later I shall attempt to specify in detail the conditions which must obtain for us to know the f which a is when a is a material object. Now what I wish to show in a preliminary way in respect to the categories of teleology and mechanism is that, despite Kant's knowledge-relative outlook, these categories must have ontological weight if his account is to be coherent.

8. Organisms are what Kant calls 'physical ends'. A thing considered as an end of nature is such that the causality to which it owes its origin (C.J., #64) cannot be conceived of or explained on the basis of the mechanism of nature alone. "What is required in order that we may perceive that a thing is only possible in this way is that its form is not possible on purely natural laws . . . Here we have, as far as any empirical laws of nature go,

a contingency of the form of the thing in relation to reason (ibid.)." The distinguishing characteristics of such objects are those we have just examined. When these characteristics are present in some individual, or, more precisely, when we single out some individual in accordance with the conditions provided by these characteristics, then the assumption is that what we have before us is a 'living' individual, an individual possessed of 'life'. Does it follow from this that 'life' is something above and beyond those features which appear to characterize it, that 'life' is some sort of 'surplus' residing in entities of a special kind? Kant insists that explanatorily any such conceptions are unenlightening. Dualistic soul doctrines are unenlightening because in them matter becomes either an instrument of the soul, which does nothing to clarify the special organized character of matter in organisms, or the soul is taken to be the artificer of the organic structure of the individual concerned, in which case, Kant claims we would have to withdraw the product from corporeal nature (C.J., #65). The justification for the last move is that if the soul were to be regarded as the artificer of organic phenomena, then two kinds of products in the world would result: those produced by nature and those produced by the soul. If ~~the~~ conception of things were to prevail, then we would have no grounds for including living things amongst the products of nature, or, indeed, as in any way a part of the natural realm. Another ploy one might attempt in order to secure and explain the autonomy of the biological

realm is hylozoism; but it, too, like the two dualistic soul doctrines, is lacking explanatory power, for the central postulate of hylozoism simply contradicts what we take to be the essential nature of matter -- viz. as not living. From this it follows that life is not an ingredient added to matter, or any non-natural manipulation of matter. How, then, are we to conceive of life?

Kant believes that organic individuals are possessed of a "self-propagating formative power, which cannot be explained by the capacity of movement alone, that is to say, by mechanism (*ibid.*)"; but he denies that any explanatory advance is achieved either in attributing life as an essential property to matter, or by making organic configurations a function of some non-material, and thereby non-empirical agency. Materialism, in the form of mechanism, is inadequate for the explanation of biological phenomena, but so are its more extravagant opposites. Kant does believe that we can gain knowledge of living phenomena through the use of teleological reasoning, but he does not think that such knowledge is quite as 'good' as our knowledge of material phenomena arrived at through the use of mechanical and causal reasoning. What makes this curious is that for Kant the notions of "truth", as well as those of "subjective" and "objective" in reference to kinds of knowledge, are not ultimate metaphysical concepts, but critical notions referring to our success or failure in synthesizing appearances according to concepts; and on these grounds we would expect an equality between teleological concepts

and mechanical ones, since both are necessary for gaining knowledge of their respective realms. My suspicion is that Kant conceives of the notion of an ontological kind as analogous to or on the paradigm of hylozoism, for instance; that is, ontological kinds would appear to be for him ontological posits of one sort or another, rather than the empirical correlates of the critical principles of reason (e.g., mechanism and teleology). If different principles or rules are required to investigate different realms of experience, and if, as far as we can tell, investigation on the basis of these rules and principles meets with success, then it would be fair to conclude that these principles correspond to the different kinds of entities (individuals) which crop up in experience. Only a radical skepticism of the sort, I shall argue, implied by Kant's division of the Real into phenomena and noumena would justify denying that principles of reason have empirical correlates that are empirical simpliciter, and not empirical just because we have principles in accordance with which we are able to gain knowledge of them.

As a first step towards philosophically advancing this suspicion, I shall put forward the following quasi-empirical hypothesis -- one which does not veer far from the facts to the degree to which they can at present be assessed -- as a backdrop against which Kant's problems concerning the relations between teleology and mechanism can be judged and understood. Long ago, when the radiation level of the atmosphere of this planet was at a certain degree of intensity, and other such purely physical con-

ditions were 'just right', a different sort of thing for the first time appeared on the face of the earth: a living organism. It arose out of an amalgam of purely physical interactions capable in principle of reproduction in the laboratory. Since this event was, strictly speaking, not an ordinary outcome of the usual physical interactions amongst physical entities, that is, a physical event that occurred as a predictable outcome of physical interactions in accordance with physical laws, but was rather a unique happening due to a special set of physical conditions obtaining at that time but not before (and, granting some temporal leeway, not after either), it would be surprising were there no hiatus between what was produced on this occasion and what is produced during the more usual physical occurrences of the world that happen in accordance with physical laws. After this point the rest of this story relating to the rise, growth and diversification of life can be appropriately filled in by evolutionary theory. A theoretical presupposition of my hypothesis is that physical laws are, at least partially, descriptive in character, so that the possibility of reproducing life in the laboratory is not a theoretical feat, but a technical one; its achievement would not amount to a discovery concerning any of the persisting features of nature, but would reflect on only our technical mastery of the elements of nature in order to bring about some non-natural, non-law-abiding event. Of course, demonstrating that science is not just a matter of technical mastery is one of the principal aims of this

essay.

On the basis of the above hypothesis we can go on to say that generally, after that (those) original happening(s), life was no longer produced by empirical physical laws of nature, indeed, on my hypothesis it was not produced in accordance with laws in the first place, but occurred as a fortunate accident, a mutation of the physical world, and after those inaugural happenings these entities became self-productive of their own kind, one of the characteristics, as we saw, which distinguishes life from the rest of the physical world.<sup>23</sup> This removes the problem of having to think of nature comprehended by physical science as continually producing life, and provides a first approximation of what can be meant by an "ontological kind". Nature, as understood in terms of purely physical laws, is not the source (ibid.) of organisms; though it was a complex interaction of entities themselves obeying strictly physical laws that produced life in the first instance. This hypothesis is in general accord with Kant's contention that it is organisms "that first afford objective reality to the conception of an end that is an end of nature and not a practical (i.e. a human and intentional -- JB) end (ibid.)." The given of biological investigation is organisms having a form that is a norm or standard for inquiry; it is an end explaining its parts, which are in turn conditions of or for the whole. ("Kinds", as was suggested earlier, and will be substantiated rather more later on, simply are norms for those entities with which they are associated.

Thus when one asserts "Man is a rational animal", one does not mean that all or some large percentage of men are rational, or have the ability to perform rational feats, like thinking and acting; but that every normal, well and/or properly formed human being has this ability. The interesting question concerns from where kind concepts -- substance universals and sortal concepts -- derive their normative strength.) It is because living things are as they are that we are justified in employing teleological explanations -- assuming here that teleological explanations do "explain" biological phenomena -- in regard to them, the form of explanation following after the fact of the existence of these sorts of things in the world.

Deriving this paradigm from the cases where an "end" is a human purpose, an idea we attempt to bring about through action, Kant orients his discussion, to begin with, towards an inquiry into the origins, possibility, source, production or, in general the cause of living things. It is from this reasonable -- although, it so happens, erroneous -- perspective that he considers what is involved in judging organisms teleologically. The difficulty of looking at the problem of teleological explanation with respect to organisms from this precise slant is demonstrated in the following paragraph.

Now the first requisite thing, considered as a physical end, is that its parts, both as to their existence and form, are only possible by their relation to the whole. For the thing is itself an end, and is, therefore, comprehended under a conception or an idea that must determine a priori all that is to be contained in it. But so far as the possibility of a thing is only

thought in this way, it is simply a work of art. It is the product, in other words, of an intelligent cause, distinct from the matter, or parts, of the thing, and of one whose causality in bringing together and combining the parts, is determined by its idea of a whole made possible through that idea, and consequently not by external nature. (ibid.)

As Kant realizes, this way of putting the matter is both inadequate and somewhat misleading. Considering organisms on the analogy of art misrepresents the situation because nature organizes itself and does not, like the artist, stand outside of the materials to be fashioned. The form of a living entity cannot as a final or ideal cause be a real cause of it in the same way in which ideal causes are real causes with respect to art products, for in the case of organisms there exists no external craftsman to hold the form 'in mind', and to construct the desired product according to that idea. But if the forms of organic things do not work on the paradigm of art works, how do they work? For Kant the obvious conclusion is that if the forms of living things are not real causes by being ideal causes first, then they are not real causes at all. Thus the idea of the whole of a living thing, that is, the unity of the object, can only be regarded "as the epistemological basis (Erkenntnisgrund) upon which the systematic unity of the form and the combination of the manifold contained in the given matter becomes cognizable for the person estimating it (ibid.)." It seems plausible to suppose that this weakening of how we are to regard the form or unity of the organism, as well as the weakening of the correlative principle on which the intrinsic

finality of organisms is to be estimated ("An organized natural product is one in which every part is reciprocally both ends and means (C.J., § 66.") into a maxim (a term which has subjective connotations in Kant) derives from Kant's unwillingness to recognize organisms as a separate ontological kind; and this, in part, because unlike physical objects, it would seem we do not have insight into the 'production' of living things. But is not this latter doubt (clearly expressed in Kant's vichian sounding motto: "We have complete insight only into what we can make and accomplish according to our conceptions (ibid.).") the same as a refusal to consider more than one ontological kind as possible? One would suppose the point of regarding the teleological principle as universal and necessary (albeit only regulative) for organisms is to indicate that explanatorily it is these kinds of laws that hold for organisms at the most basic level, just as for physical things, as will be demonstrated in detail later, only laws having a reference to forces or point centers of influence in their antecedent clauses are acceptable at the most basic level.<sup>24</sup> While forces can explain the possibility of things by explaining the principles unifying objects and binding their many properties into a whole, the existence of forces cannot itself be explained; and similarly, we can explain the coming to be and the passing away of individual organisms, the processes that go to make up the whole, and the appearance and disappearance of various kinds of living things, but we cannot explain the fact of life itself. Alternatively, we could

press the same point in the following way: if teleological principles are both universal and necessary for the explanation of vital entities, and organisms do afford objective reality to the conception of an end, then on Critical Principles, what basis has Kant for regarding the unity of the organism as only an epistemological ground for the estimation of organisms, and the principle of finality of organisms as only a maxim? In what could the normative strength of the regulative principle of teleology differ from the normative strength of the constitutive principle of mechanism?

If ontological kinds themselves are incapable of explanation because they set norms by which and in accordance with which we explain, then if life is truly ontologically different from brute matter, irrespective of how many times we produce life in the laboratory (reproducing the primal scene) we will never succeed in explaining the fact or the existence of life from physical laws alone. An hiatus between the physical and the living will remain. And this is just as Kant contends it is: mechanical laws cannot explain organic phenomena; from the perspective of physical science the form of living things is contingent. The assertion that an organism is a physical end is then a claim about the sort of laws holding at the most basic level of explanation for it. To go on to assert, as some do, that in this case, and in others like it (e.g., with respect to historical and sociological explanations) the form our theories in these areas take is indicative of some overriding

explanatory inadequacy, is simply to deny altogether that we do have any hard knowledge of these particular realms of phenomena -- a claim that to me seems far more dubious than admitting there are different kinds of entities in the world, each requiring a form of explanation unique unto itself.

There may still appear one or two gambits open for denying the conclusion towards which we are moving. First one could suggest that only the deductive form of explanation actually explains anything, and therefore all other forms of explanation are illegitimate. This fails, however, because it begs the question at issue; moreover, it denies Kant's own opening move of arguing that teleological explanations are universal and necessary with respect to living things. What if one were to argue that scientific theories hold good only for phenomena, not things in themselves, and that phenomena are only those entities constituted by the category of causality, and that any scientific 'categories', like mechanism, must be a form of the causal category? This, too, is question-begging, since our argument is challenging the hegemony usually accorded to the category of causality, and therefore, that form of phenomenalism usually associated with it. No weaker form of phenomenalism would be adequate here because to identify being with knowing in general leaves open the question of what categories we do need to synthesize the manifold of appearances, i.e., it leaves open the possibility that the being of living things is coincidental with our knowing them under the principle

of teleology. Kant has other, more demanding and more abstruse reasons for wishing to limit the authority of teleological thinking, without however wishing to deny it some limited form of objectivity; these reasons are internal and architectonic, and in order to understand them properly one must turn to Kant's discussion of these matters in the "Dialectic of Teleological Judgment".

9. The proposed solution in the "Dialectic" (DTJ) to the clash between the mechanistic principle and the principle of teleology is still matter of some dispute. On the one hand, Kant informs us that there is only a purported antinomy between the two, but no real antinomy because both principles are simply regulative; on the other hand, a complicated story is offered about how the two principles can be seen to be compatible if we refer them both to a unified, underlying supersensible substrate. These two compatibility accounts are, to be sure, to be found in DTJ, but their interrelation can best be understood if they are regarded as responses to two or three intimately connected but nonetheless separate problems. The first, the regulative account, deals with the clash between the two principles when they are regarded as guiding and organizing empirical research; as such their regulative status insures a policy of mutual non-interference, thus guarding against the possibility of a hasty usurpation of one by the other. The second, the supersensible account, attempts to come to terms with the fact that the mechanistic principle is grounded by an analogous principle -- the causal principle -- shown in the Second

Analogy to be constitutive of any experience whatsoever in the phenomenal world, while the teleological principle has no such analogous correlate of transcendental status. The principle of mechanism is a principle of reason or judgment, and not, like the category of causality, of the understanding; but this is because mechanism, unlike causality, has for Kant an empirical content.<sup>25</sup> Mechanism is specification of the causal category with respect to the motions of objects, where motion is an empirical concept, and all changes in the physical world are regarded as possible only through movement. If this is so, then good reasons exist for Kant's ambiguous treatment of mechanism in DTJ; looked upon as just a regulative principle, because it has empirical content, it is not inviolable, and must therefore stand on equal footing with any other empirical though regulative principles we might use to guide our investigations. However, as the specification of the category of causality the hegemony that category possesses as constituting and constitutive of empirical experience accrues to it. Thus it would seem as if mechanism were fallible as a specification of the category of causality, but not challengeable by any principle, such as that of teleology, which is not such a specification. To employ a political analogy: there is a constitution which says the state is ruled by a King (Causality), and though any particular king (mechanism) may be overthrown, there can be no instance in which the state is ruled by a king and some other official (teleology). Now what if some realm cannot be ruled by any king, yet there is someone who

does possess the ability to legislate over this domain? Kant attempts a program of reform; but what reform would be adequate in such a situation? I shall counsel revolution; a face-saving one, though, since, as we shall see, causality has primacy if not an hegemony: all principles which are both necessary and universal (in respect to some domain of objects) are naturally of equal normative strength, and because they are domain-specific they are one and all regulative; but where there is a hierarchy, and where causality does stand at the top of the hierarchial ladder is in respect to the range or extension of the application of our principles (categorical frameworks). The category of causality and whatever specification it receives on the empirical level ranges over the domain of all objects of experience, but it is not constitutive<sup>t</sup> of all objects of experience; any domain of objects is constituted by that categorial system necessary for it, and does not appear at any lower level of experience. Thus living things are constituted by the principle of teleology (and whatever other principles or categories go to make up a teleological framework of explanation) because although both mechanism and teleology are applicable to living things, the principle of teleology is necessary for the explanation of living things, and does not apply at all to brute material things. Of this, more at the end of our discussion of the schematism (Chapter V, B).

It is impossible to do full justice to the internal dialectic of DTJ through external criticism, for what

must be shown is that the peg upon which that external criticism hangs -- roughly, the thesis that the constitutive powers of the transcendental categories entail or assume an ontological uniformity of nature which Kant believes jeopardized by the existence of organic phenomena -- corresponds to a place of dialectical tension within Kant's own analysis. What has been regarded thus far as according proprietary status illegitimately to one categorial framework in opposition to all others appears in DTJ as a differentiation within the justificatory grounds of the two regulative principles under consideration. I wish to argue that this differentiation within the justificatory grounds for the principles of mechanism and teleology only becomes problematic because of the hegemony accorded the causal framework as constituting experience in general.

Kant's dialectic is generated from the following considerations. We know from the validity of the causal principle as demonstrated in the Second Analogy of Experience that it is impossible to: a) deduce the validity of any particular causal law; and b) be assured that any purported instance of a causal interaction in the empirical world was in fact a causal episode at all (consider: a sort of trompe-l'oeil version of the causal interaction between billiard balls). We do not even know, on the basis of the validity of the causal principle, if any empirical causal laws will be discoverable. What, then, can be derived from the validity of the demonstration of the Second Analogy? We do learn that causality

involves, in an obscure sense to be explained, a necessity that cannot be derived from observation and extrapolation from our perceptual experience of naturally-occurring regularities. More importantly for the present context, through the proof of the causal principle we become justified in our employment of the principle of mechanism -- as an empirical specification of the category of causality -- as a regulative principle for the guidance of empirical research. The transcendental grounding of the causal principle is the cash value of the notion that we are never entitled to assume, in our inquiries into natural phenomena, that some event not having a cause has occurred; but this is not the same assumption we make in employing the regulative principle of mechanism. That principle reads: "All production of material things and their forms must be estimated as possible on mere mechanical laws (C.J., ~~§~~70)." Not only is the principle of mechanism an empirical and thus defeasible specification of the principle of causality, but because defeasible it represents just one possible construction that can be placed upon the causal principle of the Second Analogy: as such, the principle of mechanism must be recognized as not following deductively from the principle of causality. A careful consideration of paragraphs 69 and 70 indicates Kant was fully aware of and operating with this suggested 'gap' between the principles of causality and mechanism, and that it is this which gives rise to the problem of insuring mechanism a priority over teleology.

If all of this is correct, then it would be a mistake to regard the antinomy in DTJ to be between causality and teleology, rather than between mechanism and teleology; to do so would be to fail to appreciate where the problem of DTJ lies. McFarland, for example, in his otherwise astute and sensitive exposition of the "Critique of Teleological Judgment", seems to me to make this mistake, thereby obscuring the central issues of that work as they relate to the rest of Kant's Critical corpus. Thus:

What is surprising is his assertion that biological investigation can as little do without the teleological principle as scientific investigation can do without the causal principle. However, in saying this, he is not placing them on the same footing. He has already called the teleological principle 'regulative', whereas the causal principle is a condition of objective experience. As he says in the present passage, without the latter principle we would have no experience at all. What Kant is claiming is that the two principles are necessary as methodological principles.<sup>26</sup>

There is a contradiction here, and this time it is not Kant's. If both principles are methodological, then they are on the same footing; if one is constitutive and the other only regulative, then they are on a different footing. The point is that the 'causal' principle functions on the two levels, so that when its constructed version -- the principle of mechanism -- is employed regulatively, which is the only way that empirically theory-laden version of the principle can be used, it is on equal footing with the teleological principle. Kant's problem derives from the teleological not having a correlate of transcendental, that is, constitutive status:

the justificatory ground of the principle of teleology is thereby of a different sort than that of the principle of mechanism and, if one takes the claim for the completeness and theoretical hegemony of the transcendental principles seriously, teleology is also in some sense "weaker" as a regulative principle than mechanism. More precisely, since judgment "receives a priori from mere understanding" (C.J.,\* 70) the principle of mechanism, while the teleological principle is "prompted by particular experiences" (ibid.), then Kant's real problem must be how to justify placing both principles on the same footing, even a methodological one. Kant wants to admit that both principles considered as regulative have equal normative strength for the purposes of directing inquiry; because, however, the justificatory grounds of the two principles are logically heterogeneous, the question arises as to whether any license can be found for so treating them.

Kant's first step towards responding to this question is an attempt to disengage the realm of science and methodology where the principles of mechanism and teleology are operative from that of determinant judgment and so the "legislation of reason" proper (ibid.). (Though I shall not dwell on it, this step is odd architectonically since one had supposed an overlap in the division between reason and the understanding in the Dialectic of the First Critique, and reflective judgment and understanding in the Third Critique.) To accomplish this task Kant points out that there are two faculties of judgment --

the determinant and the reflective -- and it is only within the latter that an antinomy can arise. "Determinant judgment does not possess as its own separate property any principles upon which conceptions of objects are founded. It is not an autonomy; for it subsumes merely under given laws, or concepts, as principles (C.J., § 69)." There can be no antinomy within determinant judgment because determinant judgment is not "independently nomothetic" (ibid.); and this means only that because it has no proper concept of an object of its own, there is no area or aspect of its performance where a clash between diverse concepts of objects or law-forms could occur. This remark is accurate, although not quite as extensive in its significance as Kant's emphasis on it would lead one to believe. On the one hand, Kant's depiction of determinant judgment does justify my contention that the principle of mechanism, as an empirical conception of the production of objects in general, is different and non-deducible from any categorial principle. Thus, as regards the universal generalization and the existential negation of the principle of mechanism treated as <sup>a</sup>constitutive principle, "Reason is unable to prove either one or the other of these principles; seeing that we can have no a priori determining principle of the possibility of things on mere mechanical laws (C.J., § 70)." It is nonetheless the case that reflection receives the principle of mechanism "a priori from mere understanding (ibid.)", and this makes sense only if we realize that determinant judgment, whose activities are

regulated by transcendental judgment, does have in the categories a concept of an object in general, so that the operations of determinant judgment do lean or point in a specific direction, and that direction is exactly what becomes specified and concretized in the principle of mechanism. Kant tells us that transcendental judgment specifies "the conditions of sensuous intuition upon which reality, that is, application, can be afforded to a given conception as a law of understanding (C.J., § 69)." The conditions for the application of any given conception (of a thing) are the categories; as such the categories are an incipient metaphysical theory about the nature of the universe, or, as I shall later call them, a partial semantics for the concept of an object in general; the principle of mechanism is a further semantical specification of this conception of objects; the principle of teleology is inconsistent with this partial semantics, or as Kant puts it, the principle of teleology is transcendent for determinant judgment.

It appears as if Kant's separation of the faculty of determinant judgment from that of reflective judgment does not cut very deep, for it is not clear that it provides for the sort of autonomy for reflective judgment Kant wishes that faculty to have. On the basis of that separation, Kant believes he is entitled to the following: "If I say: I must estimate the possibility of all events in material nature, and consequently, also all forms considered as its products, on mere mechanical laws, I do not thereby assert that they are solely possible in

this way, that is, to the exclusion of every other kind of causality (C.J., ~~X~~ 70)." But surely, if there is only one possible partial semantics for the concept of an object in general, it cannot follow from the essential defeasibility of mechanism as a fuller semantic theory that we are entitled to employ any semantic theory we wish; we are entitled only to any semantic theory of objects consistent with the partial semantics provided by the categories, and this would not include the categorial framework structured by the principle of teleology. This, of course, is not what Kant wants to say; but how can he, given the theoretical hegemony accorded to the categories in the First Critique, legitimize the autonomy of reflective judgment? In the following passage he tries to argue for the 'in principle' autonomy or independence of reflective judgment.

But in respect of the particular laws with which we can become acquainted through experience alone, there is such a wide scope for diversity and heterogeneity that judgment must be a principle to itself, even for the mere purpose of searching for a law and tracking one out in the phenomena of nature. For it needs such a principle as a guiding thread if it is even to hope for a consistent body of empirical knowledge based on a thorough-going uniformity of nature -- that is a unity of nature in its empirical laws. (ibid.)

This, too, only takes Kant part of the way, for we could never hope for a knowledge based on a thorough-going uniformity of nature if we admitted principles inconsistent with conditions for the application of any conception of objects in general. Again, Kant wants to say here that we are entitled to use any principles that will

help our inquiry into nature, that, at least for reflective judgment, our motto must be: anything goes. He has not shown, however, how on the principles binding and regulating his system he can legitimize such an anarchically founded cognitive faculty. Worse follows: if our Aristotelian tightening-up of the "Analytic of Teleological Judgment" is correct, then in order to individuate living things we must be able to recognize any one of them as the same again, and to do this we must know what it is for a thing to be a vital entity; if reflective judgment can individuate and make judgments concerning living things, then it must already possess the partial semantics requisite for knowing organisms; it must, that is, already contain the "conditions of sensuous intuition upon which . . . application can be afforded to that conception" of a thing. Since we clearly make judgments about living things, and since there now exists a viable science of biology, we must, I think, take seriously and embrace the autonomy of reflective judgment; and this means that we must deny that the principle of teleology is transcendent for determinant judgment, and therefore likewise deny the hegemony accorded to Kant's original set of categories as supplying the partial semantics for the concept of an object in general. To see what such denials involve, let us begin by examining Kant's claim that the conception of a thing as a natural end is transcendent for determinant judgment.

10. Kant provides the following account of his reasons for thinking that we cannot, in the full sense of the

term, know living things, which is to say, his reason for believing natural ends are transcendent for determinant judgment.

But in order to make use of this conception dogmatically for the determinant judgment we should have first to be assured of its objective reality, as otherwise we could not subsume any natural thing under it. The conception of a thing as a physical end is, however, certainly one that is empirically conditioned, that is, is one only possible under certain conditions given in experience. Yet it is not one to be abstracted from these conditions, but on the contrary, it is only possible on a rational principle in the estimating of the object. Being such a principle we have no insight into its objective reality, that is to say, we cannot perceive that an Object answering to it is possible. (C.J., § 74)

Let us ignore, for purposes of brevity and simplicity, Kant's worries concerning "intentional causality". At present even the most ardent reductionists admit teleological explanation as conceptually non-problematic, requiring neither the analogical thought of an agent nor any special vitalist principles. For example, the following simple schema for teleological explanation has been put forward by Charles Taylor: the conditions of an event B occurring are that the state of a system S and the environment E be such that B is required for the end of G, by which the system is defined.<sup>27</sup> The conceptual clarity of this schema for teleological explanation would not, by itself, be adequate for Kant as a demonstration of the applicability of teleological concepts to reality, for on the evidence of the above passage Kant's worries run somewhat more deeply than purely the lack of conceptual clarity. Kant's stated

reason for refusing constitutive status to the teleological principle is that we cannot be assured a priori of the objective reality of the concept, that is, we are not able to comprehend the possibility of an object answering to it. Kant believes that we must use teleological explanations in regard to organic phenomena, that we are empirically justified and prompted to do so, but that, finally, in so doing we do not know or understand quite what we are about. Under what circumstances would we be able to comprehend the possibility of objects answering to teleological principles? How could we adjudicate (a priori?) the objective validity of the concept of a natural end?

In the case of mechanism Kant clearly thinks we do understand the possibility of objects answering to mechanical laws. What is involved in understanding that possibility? One's first temptation is to look back to the First Critique as the source of such a justification. For example, Körner says, "While the first Critique justifies the mechanistic method on the basis of a mechanistic metaphysic, the third Critique justifies the teleological method in spite of the impossibility of a teleological metaphysic . . . Kant admits only a metaphysic of nature and a metaphysic of morals."<sup>28</sup> This is confused: Kant does justify the employment of a mechanistic methodology from the First Critique -- we saw this where Kant claimed that the principle of mechanism was derived from mere understanding -- but the First Critique does not contain a mechanistic metaphysics. Kant does have a metaphysics

of nature and a metaphysics of morals, but these are not contained in the First or Second Critiques respectively: Kant's metaphysic of nature is to be found in MFNS; his 'metaphysics of morals' is to be found in the work so entitled. Because I cannot here offer full support for the contentions I am about to put forward, they will be suggested in a promissory-notish way; the detail of my position will be defended subsequently, although much of the substance will appear in Chapter VI, *passim*. The categorial scheme of the First Critique does justify the employment of the principle of mechanism as a regulative one for the guidance of inquiry since mechanism is or appears to be a fuller semantic specification of the concept of an object in general as provided for by the categories. However, to say this is not to say that we understand the possibility of objects answering to mechanical laws; to do that we must first have some mechanical laws, and then see whether we can conceive of the possibility of an object answering to them. This follows from the essential defeasibility of mechanical explanation: if mechanism itself can be shown not to be the correct specification of the partial semantics provided by the categories, then it is also possible that given some set of mechanical laws we should be unable to understand the possibility of any range of objects answering to them. Thus there is a difference between being justified in the employment of a mechanistic methodology and being able to conceive of some possible object's answering to some mechanical theories. Taking mechanical

laws broadly, in the sense of any laws of motion, I doubt, for example, whether we could conceive of any objects in such a way that we could understand how and why Ptolemy's laws could work; which says nothing, of course, about the predictive value of such laws.

In *MFNS* Kant provides for Newton's Laws of Motion the sort of conceivability demonstrations in which we are interested. With very primitive mathematical tools -- vectors and vectorial addition, etc. -- he is able to demonstrate how physical objects are able to be constructed out of putative point centers of influence; in so doing he establishes the legitimacy of the quantitative science which ranges over these sorts of physical phenomena. Kant's demonstrations in *MFNS* indicate in precisely what way each of the terms entering in Newton's laws are susceptible of quantitative representation; thus we come to understand the possibility of applying mechanical laws to physical things: the very ontological composition of such entities makes them eminently suitable to mechanistic representation. If physical things were not conceivably made up out of point centers of influence, then we would not comprehend the possibility of mechanical explanation of them. Being able to provide this sort of demonstration is a necessary condition for a realistic interpretation of a physical theory, where a realistic interpretation is the same as Kant's demand that we be able to conceive of the possibility of things answering to the sorts of laws that are in question. If this is correct, then the notion of 'possibility' and demonstration at stake here is sub-

stantially different from that in question in the First Critique: there it was asked, "How is any knowledge (experience) at all possible?" and the answer to that question was a specification of the conditions necessarily presupposed as obtaining if the knowledge (experience) we possessed was to be seen as possible. Here we are questioning the possibility of our being able to conceive of a specific range of objects answering to some empirical and in the case of teleological notions, empirically conditioned conceptions of an object. This difference corresponds to a differentiation pointed to earlier between epistemology and metaphysics. As I see it, and as I shall expand upon later, Kant's demand for metaphysical demonstrations whereby we can conceive of how objects could answer to certain empirical laws or empirical conceptions of objects is based upon the insight that inductive generalizations within the conceptual framework in which we make judgments about ordinary material entities are not self-explanatory, that is, there is nothing about such generalizations that is of independent explanatory power. As we shall see, Kant's rejection of atomism is also a rejection of the conceptual framework in which we talk about ordinary material entities. In order for inductive generalizations within the conceptual framework of the observation level to be able to explain, there must be something about the objects in question which allows such laws or conceptions to explain; in contemporary parlance -- although there is more to Kant's position than this -- we should

say that inductive generalizations on the macro level presuppose theories about the objects in question, and these theories, like Kant's metaphysical demonstrations, tell us, or would tell us if we had them, just what it is for a thing to be the sort of thing it is.<sup>29</sup>

Now it begins to look as if there might be something more than a philosophical analogy at work in the relation between: a) the presuppositional requirement that for empirical laws and concepts we should be able to conceive of the possibility of objects answering to them; and b) our earlier Wigginsian point concerning the presuppositions about natural kinds, substance universals or sortal predicates we must make in order for our use of referring expressions to be theoretically coherent. This is not, I think, an analogy at all, but the same point being made in two different contexts, and at two distinct theoretical levels: the requirement that for the individuation of a there must be some f which a is is a theoretical commitment embedded in the surface structure of language, in the same way in which the requirement that for the objective reality of some empirical laws or conceptions G ranging over some class of objects B we must be able to show how it is conceivable that Bs could answer to G, is a theoretical commitment of our theoretical language. The reason these two requirements are metaphysically, and hence explanatorily, equivalent is that offering the type of metaphysical demonstration requisite in the second case depends upon there being, or our positing as there being, ontological

ultimates: unexplained, enduring entities from which such demonstrations can begin. In the context of the individuation of particular entities we likewise require general sortal concepts or substance universals to explain, give point, meaning or significance to claims concerning identity relations. What Wiggins seems to have overlooked is that the identity relation (a  $\bar{f}$  b, or a is the same<sub>f</sub> as b) is a theoretical relation and thus not immediately coextensive with or necessarily coextensive with the rules of application for ordinary usage (on the surface level) of any referring expression. (Within the context of unadulterated Kantian theory this amounts to claiming that the schematized categories articulate the metaphysical commitments of ordinary empirical knowledge; these metaphysical commitments are made good by empirical theory, and theory receives a reschematization, as it were, in our metaphysical demonstrations, whereby our general ontological commitments take on a specific empirical -- albeit only postulational -- form. This will be discussed in detail in sequel.) I now only wish to add that Kant was mistaken in expecting that the form his legitimization of the mechanistic framework in MFNS took could be carried over into any other framework.

Kant agrees that biological explanation would be impossible without the use of teleological concepts, just because living entities are the kinds of things they are (or appear to be). What must have misled Kant was that point centers of influence, which themselves receive no explanation and are the unexplained explainers lending

coherence to the mechanistic framework, are different sorts of things from the sensory properties and thus the general macro appearance of material objects which they are used to explain, and that no such bifurcation in levels, between the unexplained and the ultimate explainers, exists within the biological realm -- nor logically could this be the case. If material things are the lowest-level kinds of entity in the universe, or at least with which up to now we have had dealings; and if they are the kinds of things they are and so follow the kinds of laws they do because they are composed of the sorts of entities they are composed of -- point centers of influence; and if these ultimate kinds do not appear in the conceptual framework of physical things (but explain that framework), then if living entities are contingent in respect to the mechanistic framework there can be no lower-level kind to which living things could be reduced and so explained. Not seeing this perhaps comes from mistaking what about the metaphysical demonstrations of the sort given in MFNS makes them explanatory; they are not explanatory because we reduce one sort of thing (material objects) to another sort of thing (point centers of influence), for we do not reduce one sort of thing to another sort of thing: we explain or reduce one conceptual framework -- that of material things -- by or to another conceptual framework -- that of point centers of influence -- and in so doing find out what material things are, namely, law-abiding amalgams of point centers of influence. Explanatory power, then, derives not from

reduction but from discovering or latching on to the correct substance concepts for the domain of objects in question. Of course, if one accepts the existence of natural kinds, then this would follow almost tautologically, natural kinds -- substance universals, sortal concepts, what have you -- being norms characterizing the domain of entities with which they are associated. As it so happens, with respect to material things we must discover, posit or postulate the substances which they are, while with living things, animals and men, we articulate rather than discover the appropriate conceptual frameworks -- which does not preclude the possibility of real discoveries in these areas of inquiry.

If this argument, in outline at least, is correct, then Kant has already shown the objective validity of teleological concepts, for in demonstrating how, why, when and where they are applicable he has given the necessary conditions for their appropriate use. One could go further, if desired, and provide models of feedback mechanisms, explicate the logic of functional analysis, generate, ideally, a mathematics which could handle qualitative changes of the sort characterizing living things, etc., showing just how our biological concepts operated. The only missing link in such accounts would be that between our models and analyses, and the life of the organism itself; but, we have argued, it is just that which cannot be explained. In a same levels analysis there can be nothing more to comprehending the

possibility of a certain kind of object than specifying the logic of the concepts appropriate to it, the conditions for the correct use of that class of concepts, and those features of the range of objects concerned which we take, provisionally, to characterize them in a distinctive fashion. This process of legitimization is an open rather than closed one because the framework and concepts in question, being empirical, are continually shifting and being modified; the process of legitimization could only complete itself when we had what we took to be, for all practical purposes, a final science in respect to some particular domain of entities. Kant perhaps thought the demonstrations in *MFNS* were directed towards such a final science; but about that he was clearly wrong.

11. If only a same levels analysis is possible for living entities, then the exposition of biological phenomena and their concepts Kant offered in the "Analytic of Teleological Judgment" should constitute a demonstration of the objective reality of the principle of teleology, which itself should be able to be regarded as equivalent to a metaphysic of life, or at least a provisional sketch for such a metaphysic. Nevertheless, this cannot yet be taken as the case. An important aspect of Kant's demonstrations in *MFNS* that we have so far failed to mention is that they are done in accordance with, or, more cautiously, are regulated by the categorial system established in the First Critique: each demonstration or group of demonstrations in *MFNS* corresponds

to just one category; thereby Newton's mechanics is shown to be consistent with and a fuller specification of the partial semantics for the concept of an object in general provided by the schematized categories. On this basis, would Kant still wish to argue that natural ends were transcendent for determinant judgment? At this point there can be little doubt that what is at issue has nothing to do with any obscurity surrounding the nature of vital entities; there exists here simply a clash between the categorial scheme of the First Critique and any other possible categorial framework; and this amounts to what I earlier pointed out as a differentiation in the justificatory grounds of the principles of mechanism and teleology. Earlier we saw an analogous clash between Kant's claim for the exclusivity of the categorial framework as constituting the phenomenal world and the requirements for a consistent portrayal of his moral philosophy. We were forced to recognize at that time that unless the two-world view were dropped some of the essential aspects of moral experience would become incognizable. It again appears as if unless the exclusivity of the original categorial framework is dropped we will be forced into skepticism, this time in respect to the objective validity of our knowledge of living things. Since there is an evident overlap between finding room 'in the world' rather than outside it for persons and their actions, and widening phenomenal experience so that living entities can be seen as full-fledged members of it, perhaps, then, there is also a connection between the phen-

omena/noumena distinction and the hegemony Kant wishes to accord the categorial system. It certainly begins to look as if the security achieved in respect to our knowledge of material things in making the categories constitutive of experience in general makes for a skepticism in respect to other realms of experience; perhaps, then, the transcendental idealism structuring Kant's special form of phenomenalism is itself a refined version of skepticism. I think this is probably the case, but I do not think it is an integral or controlling aspect of Kant's philosophical thought, for I do not think Kant's idealism follows in any compelling way from his emphasis on the finitude and the activity of the knower. When we come to our analysis of the "Subjective Deduction" I will attempt to show that much of the idealist strain in Kant's thought comes from an unexpurgated remnant of Lockean empiricism which seems to me incompatible with the main lines of development within Kant's theoretical philosophy. For the present I will simply suggest that Kant's attempted resolution of the antinomy between the principles of teleology and mechanism tends towards a skeptical denouement, and will embark in the direction of a restructuring of the elements from there.

We find in DTJ as a corollary to the hegemony of the causal framework a decisive tendency towards materialism in respect to the phenomenal world: "But the possibility of a living matter is quite inconceivable. The very concept of it involves self-contradiction, since lifeless-

ness, inertia, constitutes the essential characteristic of matter (C.J., \*73)." Since this is just the assumption that all of nature is made up of one homogeneous kind of stuff: matter -- whatever matter might essentially be (atoms, forces, fields of force, etc.) -- the only way living things could enter into the phenomenal world as unmitigated members would be to be essentially made up of it; yet this we know to be impossible because, were it the case, living things would be explicable through mechanistic principles, and on Kant's analysis their form and being are contingent from that perspective, i.e., they cannot be explained in accordance with such principles. Given the fact that living things (and animals) are in some sense, however weak or attenuated, 'in the world', and we cannot explain their nature, while we can that of material things, then the 'unity' of nature in form and matter can be preserved only if some doubt is thrown upon the adequacy of mechanistic explanation; that is, no matter how adequate such a form of explanation is from our limited perspective, there must be some perspective from which it is inadequate if the unity of nature in matter and form is to be possible.

This seems to me just the route which Kant takes. It is, he argues, because of the nature of our understanding that we must estimate organisms teleologically (not, that is, because of the nature of organisms); and the character of the human understanding as discursive is likewise responsible for the divergence in the justificatory grounds between the mechanistic and teleological

principles. Kant's strategy is to claim that another type of understanding -- a non-discursive, purely intuitional understanding, for which all things that are possible are actual -- over and above the human is conceivable; and since for such an understanding organisms and material things would be equally possible, because equally actual, there is no reason to see a contradiction between our two justifications for our two principles.

The principle which is to make possible the compatibility of the above pair of principles, as principles to be followed in estimating nature, must be placed in what lies beyond both . . . but in what nevertheless contains the ground of the representation of nature. It must, in other words, be placed in the supersensible, and to this each of the two modes of explanation must be referred. (C.J., \* 78; see also \* 77)

Kant believes that by this argument he has shown that the possibility of organisms need not clash with the theoretical hegemony the mechanistic mode -- or more cautiously: the causal framework -- of explanation has for our understanding. Indeed, he goes on to say that without the concept of a supersensible substrate, indeterminate conception though it be, we would have no ground for estimating nature according to physical laws.

With respect to the issue at stake here, I feel Kant has decisively failed to carry his point. On the one hand, it is difficult to see how the conception of a supersensible substrate of nature could grant any insight into the problems before us, for "of this (super-

sensible entity) we are unable from a theoretical point of view to form the slightest positive determinate conception (ibid.)." This hypothesis, on Kant's own admission, is not a real ground for the possibility of these phenomena, but rather a possible ground that would or could reconcile the inequality of authority between our methodological principles, but in fact does not do so. It is something of an ideal solution to an actual problem, and a solution which because it is ideal fails to alter the actual situation. More importantly, however, it begs the question at issue on at least two counts. Firstly, Kant has referred into the supersensible ground of nature the same presuppositions concerning the uniformity and homogeneity of nature which generated his antinomy in the first place. What conceivable grounds are there for believing the supersensible substrate of nature is any more or less uniform in principles of organization and matter than phenomenal nature? The evidence and Kant's own principles would seem to lead to just the opposite conclusion: if our cognitive faculties operate in a uniform and consistent manner, then the fact that we need discrepant or at least divergent principles to organize nature (for the moment, at least, accepting the idea of noumenal causation) would seem to indicate that the inner noumenal ground of nature is as diverse and heterogeneous as phenomenal nature. Even though I believe the notion of an inner ground of nature demands a conception of noumenal causation, the same point could be made with a somewhat weaker, Paton-like<sup>30</sup> notion of

phenomenalism: here the phenomenal world is just the world viewed as a conjunction or interaction of mind and "matter", and the noumenal world is regarded not so much as the causal ground of the phenomenal world, but more simply, the world antecedent to or unmixed with mind. Still, why should we believe this world is in any way different from 'our' known world? This leads directly to my second point: that Kant's method of generating the 'idea' of a supersensible substrate is itself rather dubious and question-begging. Once again, there is no reason to believe an intuitive intelligence does not perceive just what we perceive when we perceive the world we do. Indeed, such an intelligence must, I believe, perceive the same heterogeneity we do. As Schrader has rightly pointed out, "it is doubtful whether even God's knowledge of the phenomenal world can be completely exempt from the limitations of space and time . . . (It) is difficult to see how God could know all that is without being aware of objects in space and time . . . But if there is genuine alteration and change, even of a mechanical sort, there would be one sense in which God would have to wait upon time for his knowledge of events. An event which takes place is different from the same event which has not yet actually transpired."<sup>31</sup> And the same must clearly hold for biological time in each of its three variants: the process of germination, maturation and decay; the cycle of seasonal alterations; and the processes of evolution. But if there are different sorts of patterns of change in the world, then an intuitive

intelligence must perceive the difference in kind between the sorts of entities undergoing these forms of change. Add to this list the pilgrim's and the rake's progress, and there seems little left of Kant's proposed solution.

## Objectivity and Idealism

1. Having demonstrated some problems that accrue to Kant's philosophy through his commitment to transcendental idealism, I will in this chapter delineate the controlling structure of his system (the cause of those problems) as well as, quite briefly, the theory Kant was attempting to refute. To be precise, I shall argue that Kant cannot be interpreted as arguing anything weaker than the thesis that the grounds of objectivity are to be found in the nature (structure) of human subjectivity. Since the forms of human subjectivity are limited, it follows that the ontology of empirical reality will be similarly restricted; that is, ontology can only be a function of the forms of subjectivity and this naturally entails the problems of ontological diversity examined in Chapter II.

I have said that Kant's ontology arises as a result of his theory of objectivity, and his theory of objectivity results from a critique of transcendental realism interpreted as a theory about the nature of objectivity. How can transcendental realism be so interpreted? Locke's scientific realism (his essentialism) represents (or at least can be interpreted as) such an account of objectivity; and the theoretical difficulties of his position can be seen to provide the starting point and a partial legitimation of Kant's procedure. Further, Kant's theory is itself apparently constructed out of (in part) Lockean materials; and Kantian idealism can be construed as a

transcendental reinterpretation of the Lockean theory of ideas.

Kant regards the Lockean (and Cartesian) thesis that we are only aware of ideas in our own minds as empirically false (we do have immediate cognizance of things existing in space outside us), though transcendently true (no representations 'really' exist outside the mind). Thus we find Kant asserting at the end of the Paralogisms of Pure Reason, that matter

does not mean a kind of substance quite distinct and heterogeneous from the object of inner sense (the soul), but only the distinctive nature of those appearances of objects -- in themselves unknown to us -- the representations of which we call outer as compared with those which we count as belonging to inner sense, although like all other thoughts these outer representations belong only to the thinking subject. They have, indeed, this deceptive property that, representing objects in space, they detach themselves as it were from the soul and appear to hover outside it. Yet the very space in which they are intuited is nothing but a representation, and no counterpart of the same quality is to be found outside the soul. (A 385)

The pattern of Kant's thought and argumentation in the preliminary exposition of the first edition Transcendental Deduction and the Fourth Paralogism indicates that the Critical theory can best be interpreted as an attempted transcendental reinterpretation or dialectical sublation (Aufhebung) of the "new way of ideas".<sup>1</sup> Because Kant does not reject the Descartes-Locke picture of the mind's relation to reality, but provides only a reinterpretation of it, his own position is, I shall argue, open to the same sort of criticisms which he levels against Locke and Descartes.

As the passage from A 385 makes plain Kant's greatest difficulties surround his accounts of matter and space: these represent the source of absolute alterity in our world. Locke sought the grounds of objectivity in the spatial configurations of matter; his failure motivated Kant to deny the function of matter within the order of knowledge altogether. But as the source of alterity in the world matter must not only be overcome (displaced) in the order of knowledge, but it must be displaced from the order of being as well. Kant tends, I think, to reduce the problem of alterity to the problem of space. Kant intends the idealization of space to accomplish two tasks: to remove absolute alterity from the world of experience while preserving spatiality as a ground of world order. Matter, however, cannot be so easily dealt with. Technically, the idealization of matter is accomplished by means of the idealization of space; but this cannot be the full story since Kant must still account for the source of appearances, that is, of something that is other than the mind which comes to be known through judgment. If there is no alterity in the world, then there is nothing in the world to be known; if there is alterity in the world, then an account must be provided of the relation between it and the known order of things. Another way of putting this second point is to say that Kant does not and cannot account for the constraints the objects of knowledge place upon knowledge. In fact, the central argument of this essay will be that the constraints objects place upon our knowledge of them

are the grounds of objectivity; and this will imply the falsity of Kant's entire program or, indeed, any program like it.

In section A I will sketch some of the dilemmas of Locke's realism. This will serve as the background for my account of Kant's transcendental reworking of Locke's position in section B. Section B will consist of three parts: Space; The Grounds of Objectivity; Transcendental Idealism and Ontology.

#### A. Dilemmas of Lockean Realism

2. Ideas for Locke possess a double function: they are, on the one hand, perceptions which are in our minds and stand up directly before the mind's eye; on the other hand ideas can be regarded as modifications of matter in bodies which cause the ideas we perceive in our minds. Ideas are both what we perceive (immediately) and monograms of the cause of what we perceive. Ideas before the mind no more need to resemble their causes than do the words we employ to refer to those ideas for the purposes of communication need to resemble the ideas themselves. Ideas as in the things themselves can be denominated "qualities".

Whatsoever the mind perceives in itself, or is the immediate object of perception, thought, or understanding, that I call idea- and the power to produce any idea in our mind, I call quality of the subject wherein the power is. Thus a snowball having the power to produce in us the ideas of white, cold, and round, the power to produce those ideas in us as they are in the snowball I call qualities- and as they are sensations or perceptions in our understanding, I call them ideas- which ideas, if I speak sometimes as in the things themselves, I would be understood to mean those qualities in the objects which produce them in us. (E: II, viii, 8)

Notice the theoretical fluidity implied by the "bifocal"<sup>2</sup> interpretation of ideas: references to ideas, in language say, will function firstly in a reporting way of what one is perceiving; secondly, words referring to ideas will by extension refer to that in bodies which is causally responsible for those ideas being thrown up against the screen of the mind. In contemporary parlance we should make this latter point by saying that ideas are from the first theory laden and that our observation language has theoretical commitments which cannot be detached from it.

Locke contends there are qualities which bodies possess which cause us to perceive ideas in our minds. The use of the term "qualities" in this context is notably pickwickian: not all the qualities of bodies belong to bodies as things in themselves, or, more precisely, not all our ideas of qualities resemble those qualities as they exist in bodies themselves.

The ideas of primary qualities of bodies are resemblances of them, and their patterns do really exist in bodies themselves- but the ideas produced in us by these secondary qualities have no resemblance of them at all. There is nothing like our ideas existing in the bodies themselves. They are, in the bodies we denominate from them, only a power to produce those sensations in us; and what is sweet, blue, or warm in ideas is but ~~the~~ the certain bulk, figure, and motion of the insensible parts in the bodies themselves, which we call so. (E: II, viii, 15)

Of course, although Locke does not explicitly mention it here, primary qualities have the power to produce in us ideas of themselves as well as ideas of secondary qualities; this much is assumed as obvious. Now Locke's

resemblance doctrine, as traditionally interpreted, masks a confusion as to whether his distinction between primary and secondary qualities is a straightforward ontological thesis, or an epistemological thesis about the objectivity of certain kinds of ideas which rests upon an ontological hypothesis. The ontological thesis is that bodies are made up of insensible parts which have only, in themselves, primary qualities, and this thesis is irrelevant to the thesis that our ideas of the macroscopic primary qualities of bodies resemble qualities which bodies do in fact possess; that is, the resemblance doctrine argues for a certain epistemological priority with respect to objectivity for primary qualities over secondary qualities, and this priority can be established (if at all) without recourse to any ontological hypotheses as to what qualities or properties bodies truly possess of themselves. Moreover, both the thesis about the ultimate constituents of the physical universe and the thesis about the primacy of primary qualities can be separated off from the thesis that we are only aware of ideas in our minds, for this last thesis may be false even if none of our ideas of the macro primary or secondary qualities of things enter into our final ontological accounting of the constituents of the universe.

When discussing the origin of various ideas Locke does not in fact distinguish primary from secondary qualities: he says our simple ideas, when truly considered, refer only to the powers of bodies which cause

us to perceive the ideas we do (E: II, xxiv, 37); and this much, at least, should be uncontroversial except with respect to the simplicity contention. All ideas, taken as referring to the qualities or properties of bodies, do not have either one uniform appearance or conception in the mind (E: II, ii, 1), but have some complexity within themselves; e.g., a sound will possess pitch, quality and loudness, a color intensity and hue. In general, each of the primary variables of a body, that is, each of its sensible qualities will have some set of 'dimensions', and a value of each of the dimensions of a primary variable will be instantiated whenever that primary variable is instantiated. This aside for the moment, there is nothing about the causal theory of the origin of our ideas itself which would allow us to separate primary qualities from secondary qualities, at least not without further argument. Now Locke does have a further argument, but it is an ontological argument to the effect that the secondary qualities of bodies cannot be in the bodies themselves; but this argument will not get Locke his conclusion that our ideas of primary qualities resemble those qualities as they exist in bodies. It clearly does not follow from:

- i) we have ideas of both secondary and primary qualities;

and

- ii) bodies possess primary qualities in themselves but not secondary qualities;

that

- iii) our ideas of primary qualities resemble those qualities as they exist in the bodies themselves.

To get to iii Locke would still need the extra premise,

- iv) whatever ideas we have of qualities which bodies possess in themselves, resemble the bodies' qualities;

but the introduction of iv yields a petitio principii. Given the crude form of the causal theory which Locke holds, his argument is even in worse shape than it first appears, since he must tacitly assume that while it is the micro-particles of things which cause us to perceive their secondary qualities, it is their macro-structure (texture, shape, size) which causes us to perceive their macro primary qualities. Yet what actually produce our sensory states are the operations of "insensible particles" on our senses; and this would, if anything, homogenize (assuming all men to have the same sensory capacities, defects aside) the epistemological status of primary and secondary qualities.

Recent commentators tend to support this view. On the basis of E: II, viii, 17-18, Mandelbaum argues that Locke does not attempt to derive an epistemological conclusion from his ontological premise. Rather, Locke is simply drawing out the implications of the corpuscularian hypothesis when he distinguishes between primary and secondary qualities, i.e., secondary qualities do not exist at all apart from our perception of them, while primary qualities exist in bodies whether we perceive them or not, and this need not imply anything about the accuracy of our ideas of primary qualities as opposed to secondary qualities in the epistemic delineation of objects.<sup>3</sup> The strength of this argument stems from

a textual point: in Locke's central discussion of primary and secondary qualities it is the problem of what qualities bodies in themselves possess which holds the center of the stage, and questions of "resemblance" can be easily relativized to this problematic. Thus: "the ideas of primary qualities of bodies are resemblances to them, and their patterns do really exist in the bodies themselves; but the ideas produced in us by these secondary qualities have no resemblance at all. There is nothing like our ideas existing in the bodies themselves (E: II, viii, 15)." The question of "resemblance" then need not be taken as concerned with any epistemological questions, such as those of veridicality and accuracy, but only with the wider categorial division between those kinds of ideas which have resembling correlates in the world and those which do not. If Locke were concerned with epistemological problems in Chapter viii of Book II, we should expect to find something about the over-all accuracy of our judgments of secondary qualities as compared with primary qualities. Discussions that sound as if they were about the veridicality of judgments, as in Section 18, turn out to carry only ontological import: "And yet men are hardly to be brought to think that sweetness and whiteness are not really in the manna, which are the effects of the operations of manna..."

In support of the present line of argument consider what Locke has to say on the truth or falsity of ideas. We can ask whether: i) our ideas of x are conformable to other men's ideas of x; if so then they are in this respect

true; ii) our ideas are conformable to some real existence; for example, there are men in the world, but no centaurs; and iii) our ideas of the real constitution of anything conform to them as they exist; in the greatest part not (E: II, xxxii, 5). Both ii and iii are relevant to the present discussion. With respect to ii Locke argues that the truth of simple ideas (of both primary and secondary qualities) refers to their suitability as marks for us to distinguish one thing from another, whether or not simple ideas (qualities) belong properly to the thing in question or not.

...it alters not the nature of our simple idea whether we think that the idea of blue be in the violet itself or in our mind only; and only the power of producing it, by the texture of its parts reflecting the particles of light after a certain manner, to be in the violet itself. For the texture in the object, producing the same idea of blue in us, it serves us to distinguish, by our eyes, that from any other thing: whether that distinguishing mark, as it is really in the violet, be only a peculiar texture of parts or else that very colour, the idea whereof (which is in us) is the exact resemblance. (E: II, xxxii, 14)

On this account the truth or veridicality of ideas concerns the regularity and law-abidingness whereby certain ideas are produced in us, whatever the actual nature of their cause may be. Hence there is no 'semantical' distinction between our ideas of primary and secondary qualities: both qualities refer to the regular production by things of simple ideas in us, and it is constancy and not verisimilitude which makes for the truth of an idea. Indeed, in the very next paragraph Locke suggests (anticipating Wittgenstein's black box argument) that it would not even matter if someone's

mind were differently equipped or constituted from our own as long as "he would be able to regularly distinguish things for his use by those appearances, and understand and signify those distinctions marked by the names blue and yellow, as if the appearances or ideas in his mind, received from those two flowers, were exactly the same with the ideas in other men's minds." And this line of argument receives further support from what Locke has to say about iii: all our ideas of complex substances are false when we take them as representations of the unknown essences of things (E: II, xxxii, 18). Since the real essence of a thing is the micro-structure of its insensible parts, and it is that structure which is ultimately responsible for our being caused to have the ideas we do, then it follows we never, as long as we do not have knowledge of the real essence of a thing, have true knowledge of the actual cause of any of our ideas. This will go through equally for primary as for secondary qualities, unless Locke should argue that it is the macro-structure of entities which cause the ideas we have of their macro-structure with respect to primary qualities. To my knowledge, apart from statements about resemblance which we can now see to be ambiguous, no such argument is ever presented. Therefore, if the truth or falsity of ideas does not distinguish between primary and secondary qualities, then it appears implausible to argue that Locke intends by the "resemblance" of our ideas of primary qualities with primary qualities that an epistemological distinction should be drawn

between our ideas of primary qualities and our ideas of secondary qualities.

The distinction between primary and secondary qualities is not an independently justified philosophical thesis by Locke, but an implication drawn by him from his prior commitment to the corpuscularian hypothesis of Newton and Boyle.<sup>4</sup> Primary qualities are those properties of bodies which are to be found in all (sensible and insensible) parcels of matter; they are utterly inseparable from body, and are said to be "in the things themselves, whether they are perceived or not" (E: II, viii, 23). The primary characteristics of body -- bulk, mobility, figure, and number -- are responsible for, produce, or cause all our ideas, that is, the texture of the insensible parts of body which is composed solely of primary qualities causes our ideas of both primary and secondary qualities. Primary characteristics of body have perceptual counterparts; thus there exists a "resemblance" between the perceived quality and its causal source. But there exists no physical counterpart to perceived secondary qualities, since the causal source of our ideas of secondary qualities are the primary properties of body.

Locke's realism is coextensive with his acceptance of the corpuscularian hypothesis and its central corollary: the doctrine of real essences.

3. The nominal essence of gold is that complex idea the word gold stands for, let it be, for instance, a body yellow, of a certain weight, malleable, fusible, and fixed. But the real essence is the constitution of the insensible parts of that body on which those qualities and all the other properties of gold depend. (E: III, vi, 2)

According to Locke, "The common name of substances, as well as other general terms, stands for sorts: which is nothing else but the being made signs of such complex ideas wherein several particular substances do or might agree, by virtue of which they are capable of being comprehended in one common conception and be signified by one name (E: III, vi, 1)." To give a little precision to Locke's conception of the relation between a classification of items into sorts and the agreement of those items with "such complex ideas", consider the following argument.

In the usual course of experience states of substances will vary according to (for us) their sensible qualities, namely, color, sound, temperature, feel, size, smell, etc. Let us denominate these sensible qualities as 'primary variables'. The dimensions of primary variables are the ways in which each variable makes itself manifest: color has hue and intensity; sound has pitch, loudness, and quality; and so on. Now in any given region of space, at any definite time, the state of a substance is completely specified when all its primary variables are given, and the values of each dimension of each variable is likewise given. A priori there is no reason why any one of all the possible sorts of states which may exist at a given time should be represented by more instances than any other possible sort of state. Given all the possible sorts of states we may have reasonably expected that each of them would be represented in equal measure at any given time. But this turns out

not to be the case. The distribution of sorts of states at a given time is irregular in that certain sorts of states are highly represented, and others barely at all. The kind of irregular distribution of all possible substance-states indicates an order of nature above and beyond the order provided by substance-states in general. The order of substances beyond that of substance-in-general (individuals; continuants; space-occupiers) is what is denominated by the idea of natural kinds: "a kind of substance is, at first approximation, a series of states all of a kind, and possessed of the sort of continuity and relations which make them one substance."<sup>5</sup>

By complex idea Locke means precisely what we intended in speaking of certain kinds of substance-states: a complex idea is just a cluster of primary variables. Each common substance name, e.g. 'gold' or 'water', stands for (represents) such a cluster, although in actual practice substance names usually have associated with them not only the primary variables they instantiate, but also 'physical properties' ('tertiary qualities' so to speak) which correspond to the typical ways in which particular substance-kinds interact with other substance-kinds. Such conjunctions of primary variable clusters and physical properties represent, according to Locke, the "nominal essence" of the substance-kind in question: our normal ways of recognizing and classifying a single substance as being of such and such a kind.

Sortal terms refer to complex ideas, that is, conjunctions of simple ideas. The combining of simple

ideas into complex ideas, the discovery of agreement amongst numerous individuals with respect to some complex idea, and the giving of a name to a complex idea are all the work of the mind. Nominal essences, then, must be things of the mind and not reality: "the essences of the sorts of things and, consequently, the sorting of things is the workmanship of the understanding that abstracts and makes those general ideas (E: II, iii, 12)."

Although Locke believes the actual classification of individuals into kinds (and consequently the kinds denominated by sortal terms) is the work of the mind, he does not think that our practice of classification (and thus the classification generated by this practice) is without grounds in the structure of reality. Besides his more general adherence to the corpuscularian philosophy, and thereby to the position that the world contains only minute atomic particulars, Locke also says the names of substances ought to refer to their real essences, their inner atomic constitutions. However, it is evident our complex ideas of various kinds are inadequate in this regard since they are nothing but the result of our combining various first-order properties (ideas or values of primary variables) and designating the resultant combination with a common name. Thus there arises a bifurcation between the practice of employing common names and the theoretical, general cognitive intention and presuppositions of their employment.

The real essences of those things which we distinguish into species, and as so distinguished we name, ought to be known: i.e. we ought to have ideas of them (viz., real

essences). (E: III, vi, 18)

Now then, when men apply to this particular parcel of matter on my finger a general name already in use and denominate it gold, do they not ordinarily or are they not understood to give it that name as belonging to a particular species of bodies, having a real internal essence, by having of which essence this particular substance comes to be of that species and to be called by that name? If it be so, as it is plain it is, the name by which things are marked as having that essence must be referred primarily to that essence; and consequently, the idea to which that name is given must be referred also to that essence and be intended to represent it.  
(E: II, xxxi, 7)

What is the point behind and force of Locke's "ought" and "intended to represent" here? I think what Locke was driving at is the thesis that the idea of there being (the conception of) natural kinds involves of itself the idea that those kinds have real essences. This argument does not depend in any way on the distinction between primary and secondary qualities, but only on the distinction between the manifest qualities of a thing, its first-order properties, and its inner nature; although Locke doubtless adopted this position because of his primary/secondary quality distinction when considered against the background of the Aristotelian (scholastic) substantial-form account of the essence of species. This, then, is a perfect instance of Locke's reworking and regimenting traditional realism to the structure of empirical reality as revealed through scientific inquiry.

In general, Locke intends no more here than our previous argument to the effect that the use of common names presupposes the existence of natural kinds.

Amongst the first-order properties (by which we recognize and classify things) of different substances of the same kind at a single time there exists a great variety; similarly, there exists a great variety amongst the first-order properties of the same single substance at different locations in its spatiotemporal career. Yet we 'intend' our assertions, for example, that both this thing here and that one there are gold, and that this is the same oak here-now as you saw twenty years ago although its material substratum has completely changed during the interim (see E: II, xxvii, 3-4), to be true. On the basis of the first-order properties of those things, however, we would not<sup>be</sup> and are not justified in our assertions. Briefly, this is the same problem as we encountered with the identity of living entities: the 'same<sub>f</sub> relation' between entities of the same natural kind turns out to be an ineliminably theoretical relation, and cannot be accounted for (justified by) first-order properties. When I designate the individual before me as 'gold' I intend that other substances instantiating the same cluster of primary variable values and interactional properties be the same as it, but because of wide variation in first-order properties these clusters (complex ideas) can only have recognitional and not constitutive value: the same<sub>f</sub> designation is underdetermined on the basis of first-order properties.

We are now ready to point up some of the dilemmas of Locke's theory, to show why, finally, he is a trans-

cendent realist and not a transcendental realist. There appear to be four separate problems which Locke's position faces: (i) the unintelligibility of the connection between real essences and the properties which flow from them; (ii) the lack of real relations in the world and thus the vacuity of his theory of 'powers'; (iii) the problem of unity amongst our ideas, that is, the problem of substance; and (iv) the problem of our knowledge of the existence of the external world (Locke's veil-of-perception doctrine). Rather briefly, Kant's theory of synthesis grounded in the transcendental unity of apperception is intended to serve as a resolution to (iii) and by extension, in part, (i); his theory of space serves as a resolution to (iv). Yet it is possible to see (i), (iii), and (iv) as all being special cases of (ii) -- a problem with which Kant never (in the First Critique) explicitly deals.

4. The grounds of world order rest in the real essence of particular substances: the figure, size, and situation of their insensible parts. If we were to know the real essences of things we would, by hypothesis, be able to deduce from this knowledge the properties and operations of those things. Real or demonstrative knowledge for Locke is Cartesian in nature: the deduction of effects from causes, of accidents from essences. Given this view concerning the origin of world order in the internal constitution of things it is not surprising that Locke thinks sortal terms ought to refer to real

essences. The classification of substances by manifest (perceptual) properties need not represent the actual classification of items in the world, and nothing but the hypothesis that substances do possess real essences gives us any justification for the supposition that there are substance-kinds.

It thus looks as if Locke might be contending that were we to know the internal constitution of things we would know (be able to deduce) the consequent properties of those things. The limits of our knowledge of the world would then be a contingent fact, based solely on our inadequate perceptual capabilities, our inability to perceive the insensible parts of things. If microscopic researches were to proceed successfully, penetrating into substances and allowing us knowledge of the figure, size, and situation of their insensible parts, then there would be no limitations to our knowledge of reality. Locke thinks such optimism is in principle unjustified.

but our minds not being able to discover any connexion betwixt these primary qualities of bodies and the sensations that are produced in us by them, we can never be able to establish certain and undoubted rules of the consequence or co-existence of any secondary qualities, though we could discover the size, figure, or motion of those invisible parts which immediately produce them...(E: IV, iii, 13)

Although, according to Locke, we know in general what it is for the essence of a thing to dictate its consequent properties from the case of a triangle, where "all properties...depend on, and, as far as they are discoverable, are deducible from the complex idea of three lines including a space" (E: II, xxxi, 6), in the case

of physical objects we cannot even conceive of the nature of the connection between insensible parts and properties, no less comprehend the necessity of such connections.

Locke never denies that the source of world order is to be found in the internal constitution of things in accordance with the corpuscularian hypothesis; he simply believes that our mental faculties are incapable of grasping this order from the perspective of its source.<sup>6</sup> To put this same point in another way, Locke never doubts the existence of a rigid causal order (of necessary connections), nor that the atomic structure of things is responsible for that order; only that we will ever be able to comprehend the relationship between the atomic structure of things and the general flow of events. God, angels, and ourselves in a future, more refined state (i.e., stripped of the finitude of the flesh -- and capable therefore of intellectual intuition?) would be able to perceive such connections. "Though yet it be not to be doubted that spirits of a higher rank than those immersed in the flesh may have as clear ideas of the radical constitution of substances as we have of a triangle, and so perceive how all the properties flow from thence: but the manner how they come by that knowledge exceeds our conceptions (E: III, xi, 23)."

Locke's conception of properties "flowing" from their causal basis, his notion that the relationship between internal structure and properties is such that once we know the internal structure of a thing our intuitive deduction of its properties can (should ideally)

proceed in a priori fashion (without further recourse to experience) should strike the reader as an odd, exaggerated view of what empirical knowledge should or can be like. Why should Locke suppose that knowing the size, figure, and situation of a collection of insensible particles would allow us to deduce the properties of yellow, fusibility, fixedness, etc.? A typical causal law will state: If x is placed in water, then x dissolves. If someone wants to know why this happens, then we supply them with an account of the internal constitution of x, and why this sort of internal constitution makes x water soluble. To state the powers of a thing is, then, to state how it will behave in different circumstances. We cannot know what a thing will do unless we know what the conditions are surrounding that thing. Locke, however, conceives of causal explanations progressing without reference to initial conditions. In fact, Locke's theory cannot tolerate the statement of initial conditions as necessary to the explanation of the behavior of an object since this would entail that the properties of an object could only be specified through their relation to other objects, thus countermanding his usual restriction against relational properties. The propriety of this criticism of Locke's real essence doctrine (the method of deduction from real essences) can be strengthened through an examination of his theory of "powers".

Let us begin by asking the question: Why should Locke believe that the bulk, figure, texture and motion of the insensible parts of gold are qualities which are

in the gold but not its being yellow? The correct but philosophically useless answer is that he did so because he accepted the primary/secondary quality distinction, it being in accordance with the best scientific knowledge available. One can see how much this is presupposed and not argued for in the following way. Ideas of secondary qualities refer to the powers of bodies to produce those ideas in us, and the powers of bodies are qua powers dispositional and hence relational. Locke seems to take it that whatever qualities are dispositional and relational in nature must be rooted in some non-dispositional and non-relational qualities, viz., primary qualities. Thus speaking of our ideas of gold, Locke says they "are nothing else but so many relations to other substances, and are not really in the gold, considered barely by itself, though they depend on those real and primary qualities of its internal constitution, whereby it has fitness differently to operate and be operated on by several other substances (E: II, xxiii, 37)." There is, as far as I have been able to discover, no line of explicit argument in Locke to the effect that the dispositional powers of bodies cannot be in bodies as such, and that they must have a categorical basis which is not dispositional. Rather, Locke begins with the assumption that primary qualities are in bodies and are non-dispositional, and then proceeds to analyze secondary qualities in terms of powers which require a categorical and non-relational basis, that is, to employ Locke's and Boyle's technical term, the "texture" (pattern and

configuration) of the insensible parts of a thing.

Without going into the details of the matter, I think we can glimpse the bold outline of Locke's problem. A, in virtue of property q, has the power  $\emptyset$  to bring about an alteration in B only if B possesses property r; and B, in virtue of r, has the power  $\not\emptyset$  to be altered by A only if A has the power to alter B, that is, only if A possesses q. Now if A or B no longer existed, then the powers  $\emptyset$  and  $\not\emptyset$  would no longer exist, although the survivor would still possess its power-giving property (q or r). Thus powers appear not to be real qualities (properties) of bodies. But this goes through only on the assumption, which Locke evidently makes, that all powers are individual powers -- which is false. "If one object can affect another in a certain way, then this must be (in part) because of certain properties the affected object has and it must be possible in principle to specify a kind of thing, such that the first object can affect all things of that kind in that way. The converse is not true."<sup>7</sup> At a given time it may contingently be the case that there is no individual of B's kind which A has the (sortal) power to alter; consequently A has  $\emptyset$  sortally but not individually at that time. Sortal powers then are primary over individual powers. This, however, does not go far enough. The description of sortal powers would be ad hoc unless it were combined with a complete classification of objects into kinds, presumably in accordance with their real essences. If this is accepted, then it follows that an

object having sortal powers P entails and is entailed by an object being of kind K. A change in a thing's sortal powers is (necessarily) a change in the nature of that thing.

Now this does relate to what was said about initial conditions. Initial conditions specify the physical environment surrounding an object at a given time that can be affected by or can affect that object. The antecedent clause of a causal law is an initial condition statement for an object of a kind. To be significant it must presuppose or make tacit reference to the powers of the objects concerned, since it is these powers which ultimately drive a causal sequence through to its conclusion. If x is placed in water, and x has  $\emptyset$  and water has  $\mathcal{N}$ , then x will dissolve. When dealing with perceptual situations we tacitly use a similar sort of conceptual apparatus: Ordinary perceivers (i.e., those who possess  $\emptyset$ ), under standard conditions (when the sortal powers of the percipients are operative and not being interfered with in any way), when faced with an object of kind K which has the power  $\mathcal{N}$ , will perceive a red patch in their visual field. If we dissolve sortal powers back into their causal base, then these analyses (which possess at least prima facie plausibility) are no longer open to us since we have no way of capturing those elements of a situation which condition it and which are of causal relevance to it.

In order to see the difficulties Locke runs into by overlooking these aspects of the situation we need

only recall his account of secondary and tertiary qualities. A secondary quality is the power a body has to produce an idea in us; a tertiary quality is the "power that is in any body, by reason of the particular constitution of it's primary qualities, to make such a change in the bulk, figure, texture, and motion of another body, as to make it operate differently from what it did before" (E: II, viii, 23). Tertiary qualities, like secondary qualities, are not real or original qualities of bodies (*ibid.*); whatever holds true of secondary qualities will hold equally for tertiary qualities. For Locke, since secondary qualities do not have physical counterparts resembling them in bodies, there exists no standard to measure our ideas of secondary qualities against except themselves, which is to say, our ideas of secondary qualities (our simple ideas) "can none of them be false in respect of things existing without us" (E: II, xxxii, 16).<sup>8</sup> Tertiary qualities are, plainly, our ideas of the causal relations holding between objects ("Thus the sun has a power to make wax white, and fire to make lead fluid." (E: II, viii, 23)) which, when put into conditional form, gives us a causal law. It follows, therefore, that causal laws also can never be false. A perceptual judgment can only be falsified if we can make reference to what normally is perceived under such conditions, that is, what one ought to perceive under those conditions; and this entails that one could never correct a perceptual judgment unless sometimes a causal law could be used to 'correct' the judgment of our senses. And causal laws

cannot be properly falsified if they are taken to express no more than causal regularities. If usually 'if x then y', but now 'x then z', then 'if x then y' happens less usually than supposed. Nothing would lead us to suppose that there was anything wrong with 'x then z' unless we took x to be of such a kind with (therefore) such and such sortal powers such that under these conditions x's do y. In other words we would never search for an interfering agent to explain z unless we attributed sortal powers to x which in the normal course of things never give rise to z's or z-like behavior. To correct perceptual judgments we must be able to make reference to standard conditions of which 'these' conditions are an example; we must be able, then, to have recourse to causal laws. Causal laws can only override our judgment of a particular causal sequence if they state what such kinds of bodies normally (naturally) do in given circumstances.

I am leaving it an open question for the time being as to whether we should give full ontological status to sortal powers, or natural kinds, or conditions. As I shall demonstrate later, whichever we choose it will be incompatible with Locke's atomistic ontology. And thus as it stands, we should not consider Locke's theory of real essences as committing him to a theory of natural kinds. It is, at any rate, clear that Locke took the concept of powers as requiring a theory of relations; and the concept of conditions plainly does require some conception of real relations. About the status of rela-

tions Locke was very unsure. On the one hand we find him claiming that in things relations are "something extraneous and superinduced"; and in the mind relations "all terminate in or are concerned about those simple ideas" (E: II, xxv, 8-9). Yet Locke does often include 'situation' in his lists of primary qualities, and occasionally recognizes that the state of an object must make reference to other objects: "Put a piece of gold anywhere by itself, separate from the reach and influence of all other bodies, it will immediately lose all its colour and weight, and perhaps malleableness too... This is certain: things, however absolute and entire they seem in themselves, are but retainers to other parts of nature (E: IV, vi, 11)." Locke's difficulties here are intrinsic to his atomistic ontology, or so we will argue.

5. Contrary to usual opinion, there are two problems or two versions of the problem of substance in Locke, not one. This is important for my argument since Kant took hold of the subsidiary or incompletely formulated problem, and Kant's solution to the problem of substance is irrelevant to what I shall contend are Locke's real worries on the matter.

Locke's first evaluation of the problem of substance suggests that, as a matter of fact, besides our complex ideas of substances,

besides all these simple ideas they are made up of, (we) have always the confused idea of something to which they belong, and in which they subsist; and therefore when we speak of any sort of substance, we say it is a thing having such or such qualities: as a body is a thing that is extended, figured, and capable

of motion; a spirit, a thing capable of thinking... These and the like fashions of speaking intimate that the substance is supposed always something besides the extension, figure, solidity, motion, thinking or other observable ideas, though we know not what it is. (E: II, xxiii, 3)

The idea we have of a substance qua substratum is that of a bearer of properties, or of a subject of predication; and this implies that we are committed to distinguishing between two sorts of items in the world: properties and things. Locke's various ways of trying to identify our idea of substance are well-known: substances are what "stand under" and "uphold" properties; properties "stick on" substances or are "propped up" by them; or, he says, all the ideas we have of particular substances "are nothing but several combinations of simple ideas, co-existing in such, though unknown, cause of their union as makes the whole subsist of itself" (E: II, xxiii, 6).

The problem of substance first comes up as a problem about simple ideas. Simple ideas, of themselves, appear to be incomplete, or unsaturated; they make tacit reference through their incompleteness to that of which they are (predicate) parts. In other words, in perceiving we have ideas of things (by way of their properties) but not ideas of the things themselves. In the mind, then, there is no unity amongst ideas because that which our ideas are of is not in the mind. Things in the world, however, are not made up of ideas, but of insensible parts possessing only primary qualities. Therefore the problem of the unity of simple ideas cannot be the whole

of the problem of substance. The substratum doctrine must have a physical counterpart; and since the substratum theory itself represents a 'mystery' about the unity of objects, we should expect that the physical (ontological) counterpart of the epistemic notion of substance to be shrouded in mystery as well. Locke's discussion of the cohesion of the parts of bodies neatly fits this requirement.

and by how much the more evident it proves that the parts of other bodies are held together by the external pressure of the aether, and can have no other conceivable cause of their cohesion and union, by so much the more it leaves us in the dark concerning the cohesion of the parts of the corpuscles of the aether itself; which we can neither conceive without parts, they being bodies and divisible, nor yet how their parts cohere, they wanting the cause of cohesion which is given of the cohesion of the parts of all other bodies. (E: II, xxiii, 23)

If we cannot conceive of the nature of the unity of the parts of things, then we cannot, plainly, conceive of either the nature of individual continuants, or (therefore) of what the real essences of things are. Now this latter point may seem surprising since we know that the real essences of things are the configurations of their insensible parts. But this cannot be quite right since if we understood why (the significance of the fact that) atoms of gold cohere in a way different than atoms of iron, then we would also know why gold produces ideas w and x, and iron produces ideas y and z. Therefore, the understanding of the nature of the cohesion of parts does seem to represent the same problem as understanding the nature of real essences, that is, understanding the link

between real essences and ideas.

On purely philosophical grounds this identification of problems makes perfect sense if we keep in mind Locke's claim that there is nothing more to things than a configuration of their parts. Consider the problem of unity. Locke claims that there is a difference between a heap, or random collection of parts a, b, and c, and a thing with parts a, b, and c. This difference, however, cannot be anything in the thing because all there is in the thing are parts a, b, and c (in configuration --- but the parts a, b, and c of the non-thing will have some configuration as well). Similarly, different things have different powers; but the different powers of things can neither be enough to distinguish different things from one another, nor (therefore) to account for the unity of things since powers are only configurations of parts. To know the real essence of a thing would be to know its powers, but we cannot know real essences as the bases for powers because we cannot even distinguish between collections of parts and things having parts. If one could answer Locke's problem about substance, then one could answer his problems about the nature of real essences and powers. As it stands, however, Locke possesses neither an account of what makes an object a thing and not just a collection of parts, nor an account of how the real essences of different things account for the differences between those things. And Locke cannot supply an answer to one of these questions without at the same time supplying an answer to the other.

The epistemic version of Locke's problem with substance points to a last dilemma in his system. The existence of a special problem about the unity of ideas suggests that ideas are ontologically different from properties of objects and not just epistemic counterparts of them.<sup>9</sup> This gives ideas an entitative status mediating between mind and matter. That this thesis leads to a dilemma Locke himself plainly saw. "It is evident the mind knows not things immediately, but only by the intervention of the ideas it has of them. Our knowledge, therefore, is real only so far as there is a conformity between our ideas and the reality of things. But what shall here be our criterion: How shall the mind, when it perceives nothing but its own ideas, know that they agree with things themselves (E: IV, iv, 3)?" Never too worried by justificationalist dilemmas, Locke replies that we must assume that these ideas are the product of things without us.

Even if Locke did not intend his 'ideas' to have entitative status, his theory of judgment forces him to treat them in an entitative fashion. The only knowledge we have of things without us are ideas representing their primary and secondary qualities. This thesis commits Locke to the primacy of ideas (and by extension, words) over judgments (and so statements and sentences). Ideas, we should say, are immediately intuited by the mind rather than cognitively apprehended, and therefore nothing is left for judgment but to affirm or deny ideas of something, or affirm or deny something of them (E: II,

xxxii, 3). This is part of what is implied by the traditional criticism that Locke sensualized what are properly cognitive processes. One has only to turn to Hume to see the implications of this. Hume identifies 'matters of fact' with absent 'matters of fact' on the grounds that present perceptions and statements about one's own present inner states are incorrigible, and therefore not open to falsification as any 'judgment' must be. For example, Hume asserts that it is only causal reasoning which allows us to go beyond our present perceptions and memory: "All reasoning concerning matter of fact seems to be founded on the relation of Cause and Effect, By means of that relation alone we can go beyond the evidence of our memory and senses. If you were to ask a man, why he believes any matter of fact, which is absent..."<sup>10</sup> And again, Hume discussing what would befall a person who lacked the ideas of cause and effect: "Such a person, without more experience, could never employ his conjecture or reasoning concerning any matter of fact, or be assured of anything beyond what was immediately present to his memory and senses."<sup>11</sup> One conjectured hypothesis, by Bennett<sup>12</sup> as to why Hume would tacitly suppose that matters of fact concern only absent matters of fact is that in reporting one's own present inner states one is 'safe': one requires in such instances no knowledge of the past or future or of anything other than oneself and how it is with one at that time. Likewise one is safe in stating logical and analytical truths. Thus since these two kinds of knowledge are

incorrigible, they cannot be 'problematic' as pieces of knowledge in the sense in which absent matters of fact are, and so are not matters of fact at all. Therefore, one can assume with respect to immediate ideas that no cognitive processes need to be posited as underlying them, beyond, of course, simple immediate apprehension. This is false, but it took Kant's initiative to make it plain that it was so.

Locke's position is similar to Hume's: questions of truth or falsity only arise when we refer ideas to "anything extraneous to them" (E: II, xxxii, 4), which is to say, we do not make judgments in apprehending ideas but only in affirming or denying their conformity to some real existence, say, and given <sup>the</sup> fact that all we know of existences are ideas in our minds, Locke's correspondence theory of truth never gets off the ground. Because he does not treat the apprehension of ideas as fully semantical or cognitive, that is, as immediately concerned with truth or falsity, Locke is forced to treat ideas as if they were things when the question of truth or falsity arises. Locke, however, was unable to conceive of perception as judgment because, as already shown, he was unable to conceive of how our ideas of secondary qualities could be false. And this, we argued, is a direct result of his theory of powers.

When he comes to deal with the problem of truth Locke adopts, eventually, an idealistic and not a realistic position: an idea is 'true' of the thing it represents only if its regular production allows us to

regularly distinguish it from other things (E: II, xxxii, 14). This theory fails abysmally because there are no constraints upon it: we cannot distinguish a thing from our idea of it -- the reporting and representational aspects of ideas are indistinguishable -- and thus the distinctions between ideas have no point except as supplying differentiations within the stream of consciousness.

B. Kant's Transcendental Interpretation of the Theory of Ideas

6. Space. Let us begin by examining how Kant handles Locke's last dilemma: the problem of our knowledge of things existing without us.

Kant outlines the position of the transcendental realist (empirical idealist) and attacks it as follows. Nothing that is not in the mind can be perceived directly by the mind; to assume the opposite is to suppose that an object can be thought by the mind that is not given to the mind, which is a contradiction. Therefore an object which exists on its own outside the mind is never given to the mind directly (immediately) in perception; rather, perception must be regarded as a modification of the mind (inner sense), and the existence of the object of thought as existing outside the mind must be added to the thought-thing. This last move can be accomplished through a causal inference; if every event has a cause, and there has been a modification of inner sense (which has not been willed), then there must have been a cause existing without the mind which is responsible for the mental

affection directly perceived. Kant objects to this line of argument because it places our knowledge of externally existing things on infirm foundations: since we have no immediate experience of things existing without us, the inference from effect to cause is always uncertain; we have evidence neither that things existing without us are of such a kind as to cause mental affections, nor therefore any evidence which would legitimize the assumption that all mental affections were not the (unwilled) result of mental auto-affections. Finally, then, because there are no general principles by which we can distinguish unwilled mental auto-affections from the affections of the mind which have been caused by things existing without us, we have no grounds for a belief in extra-mental reality, and therefore no grounds for our belief that our knowledge is of things existing independently of our thinking about them (A 367-8). Even the counter-argument that there is a regularity and orderliness to our ideas of externally existing entities which is not possessed, for instance, by dreams or hallucinations, falls afoul of this line of criticism: if we have no general, non-causal grounds for a belief in externally existing things, then any auxiliary principles (regularity, vividness, etc.) which capture qualitative differences amongst the class of ideas cannot justify the belief they exist without us. At most, such distinctions point to differences in classes of ideas, which might therefore justify our treating one class of ideas differently than another (to be acted upon, classified

ignored, etc.), but cannot of itself make a class of ideas be representations of externally existing entities.

All this sounds as if Kant is making or is planning to make the common contemporary criticism against Descartes and Locke of reifying ideas (sense data): we cannot set all the facts about our ideas and sensory states on one side of the fence, and all of reality on the other and then search for a connection (usually causal) between the two. Rather, to the question as to whether appearances should be regarded as accurate guides to or representations of what exists in reality, we should answer affirmatively not on causal but on logical, philosophical grounds. The details of such a familiar position need not detain us here; all that need be pointed out is that this is not Kant's position. As a condensed statement of the veil-of-perception doctrine let us assert: there is a physical reality which is represented by sensible appearances, but no physical reality is sensible. Now when Kant argues that we are immediately aware of things existing without us, he should not be taken as arguing that we are immediately aware of independently existing things. His strategy is rather to include 'space' on the mind's side of the veil-of-perception: space itself is in us (A 370). Thus where Locke has 'physical reality', Kant will have 'independent of our sensibility'; and if I am right he means this ontologically and not simply criteriologically, therefore the veil-of-perception doctrine remains in force. I think this is plain from the rest of what is said in the Fourth Paralogism.

As Kant sees it, the crux of the matter between the transcendental idealist (Kant) and the transcendental realist (Descartes and Locke) lies in their respective interpretations of the notion of things existing outside us. The transcendental realist, as we have seen, interprets 'outside us' as equivalent to non-mental or as not mind dependent, and consequently for him as what is not 'in' the mind at all. In opposition to this, the transcendental idealist regards, from the transcendental perspective, all appearances as mental representations only, all of which are thus 'in us' (A 372); however, empirically, that is with respect to our philosophically uninterpreted, ordinary experience of reality, we are immediately aware of things existing outside us because we do have immediate cognizance of things existing outside and alongside one another in space, and for empirical experience that is all that is meant by saying we have knowledge of external reality. Thus we have immediate experience not only of our ideas in inner sense, but of material things existing in space as well. Again, for the transcendental realist there is an unbridgeable ontological gap between mind and matter; only the mind can be immediately known as existing, while the existence of matter must be inferred from mind-states. In contradistinction to this, the transcendental idealist "may admit the existence of matter without going outside his self-consciousness, or assuming anything more than the certainty of his representations, that is, the cogito, ergo sum (A 370)." Note that this is not the same as

Kant's later refutation of idealism in which he says we could not be self-conscious unless we had direct access to an independently existing objective order, but rather a direct function of what amounts to a dematerialization of matter: matter relates to perceptions of entities in space "in which all things are external to one another, while yet the space is itself in us (ibid.)." The cogito is enough to guarantee the existence of matter as well as ourselves because both are immediately accessible to consciousness, and this is because the objects of both inner and outer sense are, when transcendently considered, in us. Thus the transcendental idealist is an empirical realist because he allows we have immediate knowledge of bodies in space, and consequently outside our own bodies and our own inner sense; the transcendental realist is an empirical idealist because he contends that we are only (empirically) aware of ideas in our own mind.

The mistake of the transcendental realist according to Kant is that he regards "time and space as something given in themselves, independently of our sensibility... (He) interprets outer appearances...as things-in-themselves, which exist independently of us and our sensibility (A 369)." The transcendental idealist regards space and time as "forms of our intuition, and not determinations given as existing by themselves, nor conditions of objects viewed as things in themselves (ibid.)." For Kant, then, space and time are "conditions which are originally inherent in the subject (A 43)," and

they are nothing outside the context wherein subjects order representations in a spatiotemporal manner. Space and time, when transcendently considered, fall on the mental side of the veil-of-perception; consequently, the theory of ideas although empirically false is transcendently true. But if this is so unless we are to regard the manifolds of both inner and outer sense as the results of auto-affectations (of a transcendental self, say), there must still be a transcendental (transcendent) object which is the cause of our outer intuitions.

For if we regard outer appearances as representations produced in us by their objects, and if these objects be things existing in themselves outside us, it is indeed impossible to see how we can come to know the existence of the objects otherwise than by inference from the effect to the cause; and this being so, it must always remain doubtful whether the cause in question be in us or outside us. We can indeed admit that something, which may be (in the transcendental sense) outside us, is the cause of our outer intuitions, but this is not the object of which we are thinking in the representations of matter and of corporeal things; for these are merely appearances, that is, mere kinds of representation, which are never to be met with save in us, and the reality of which depends on immediate consciousness, just as does the consciousness of my own thoughts. (A 372)

The same objections which Kant originally made against the transcendental realist can now be brought against his own position. If space is in us and objects are in space, then when we intuit spatiotemporal objects, we are perceiving objects which are within the circle of mind and ideas. Moreover, since space is inherently subjective, each mind must generate its own unique spatial manifold. Therefore, no individual experient has any but inferential evidence that anything exists

outside the compass of his own private set of experiences in space and time. It is important to insist here that Kant provides no source of justification for anyone thinking that any reality exists outside his own unique experience of it. Verbal correlations, for example, between what I perceive in space and what you perceive will belong to my and your spatiotemporal experiences respectively, and thus will in no way probablify the possibility that we are perceiving the 'same' reality, or one another.

This result can be seen as necessary consequence of Kant shifting the terms of the debate. For the transcendental realist the question was 'Does any reality exist outside my sensible experience of it?', that is, 'are there things in themselves which do not depend on my experience of them for their existence?' Kant claims that this is the wrong question; we must ask instead, 'Are there things existing in space outside my inner sense?' He achieves a positive response to this question only by evading the problematic as it was defined by the transcendental realist, that is by simply accepting the skeptical consequences of the theory of ideas. Kant's treatment of the mind/matter problem makes clear that his position involves a refusal to deal with the problems of the transcendental realist.

The much-discussed question of the communication between the thinking and the extended, if we leave aside all that is merely fictitious, comes then simply to this: how in a thinking subject outer intuition, namely that of space, with its filling of shape and motion, is

possible. And this is a question no man can possibly answer. This gap in our knowledge can never be filled; all that can be done is to indicate it through the ascription of outer appearances to that transcendental object which is the cause of this species of representations, but of which we can have no knowledge whatsoever and of which we shall never acquire any concept. (A 393)

The transcendental object is posited as the 'cause' of representations of outer sense, just as Locke posits (hypothesizes) micro entities as the cause of ideas of primary and secondary qualities. As long as no "counterpart" of space and of what fills space "is to be found outside the soul" (A 385), then the existence of any non-sensible or non-mind-dependent reality must remain hypothetical. And, again, Kant's only justification for asserting that my experience of objects in space is not the result of auto-affectations is the claim that those objects have a transcendental cause; but the legitimacy of this claim is in no better shape than Locke's claim that ideas have a causal ground in the external world. Finally, if we have no experience of a non-sensible reality, then Kant's position must be that of a material idealist, that is, entails a dematerialization of matter: where originally for the transcendental realist there existed a mind/matter dichotomy, Kant claims there exists only a separation of the objects of inner sense from the objects of outer sense. However, there exists as well in Kant a dichotomy between appearances (phenomena) and things in themselves, and it is this distinction which is the proper correlate of the transcendental realist's mind/matter distinction.

7. While it is *prima facie* implausible to argue that bodies only appear in space and are not in space, space itself being nothing apart from the subjective conditions under which we can intuit things as outside us, Kant's position has a reasonable historical motivation in the stalemate in the debate between the relational and absolute theories of space. Kant's thinking moves along the following lines.

It is impossible that there be outer appearances that do not lie alongside and outside one another, and thus part of what it is for an appearance to be an appearance and outer is that it should be involved in certain spatial relations with other appearances. For an object to be an object it must be somewhere and some-when; therefore part of what is implied in being able to separate and identify one object in the world from another is that all objects be in similar kinds of spatio-temporal relations with one another. Persons too are objects in the world, and thus the spatiotemporal order of the world allows them to distinguish themselves from the objects they perceive. Thus, for instance, we take it that there is an intervening space between a person and the object he perceives, that other objects may come between him and the first object, that he is able to approach an object or change his angle of vision with respect to it, etc. Objects are identifiable because they are in space, and therefore the very possibility of the recognition of an objective world presupposes space as the possibility of a set of ordered relations

amongst objects. In this sense spatial relations cannot depend on the relative outer relations amongst objects, for those relations themselves are only comprehensible in virtue of and must depend upon the possibility of an order which only space itself can provide. Kant's charge, then, is that spatial relations cannot be reduced to relational properties, which are in their turn explicated in terms of the predicates of substances, without at the same time making properties which are unique to spatial relations impossible. "Accordingly, Leibniz conceived space as a certain order in the community of substances, and time as the dynamical sequence of their states. That which space and time seem to possess as proper to themselves, in independence of things, he ascribed to the confusion in their concepts, which has led us to regard what is a mere form of dynamical relations as being a special intuition, self-subsistent and antecedent to the things themselves (A 275-6 = B 331-2)."

In referring to those aspects of space which it possesses as proper to itself Kant intends those aspects of space which make the mathematization of space possible, viz., infinite divisibility, homogeneity, etc. Thus Kant is attempting to argue: i) that the geometrization of space is only possible if space has properties which are independent of the occupants of space; and ii) therefore there must be properties of space that cannot be accounted for in terms of the occupants of space. For example, if we say that x moves in a straight line away from y, then we are committed to saying that there is a

point in space  $y^0$  occupied by  $y$  and a series of points  $x^1, x^2 \dots x^n$  through which  $x$  moves, and that the shortest path between  $y^0$  and  $x^1$  is a straight line, and between  $y^0$  and  $x^2$  is a straight line, etc. Now if we say with Leibniz the order of space is nothing beyond the ordering of objects in relation to one another, and moreover we are in a situation such as quantum physics supposes where substances act discontinuously, then not only are we unable to say that  $x$  is moving in a straight line with respect to  $y$ , since the shortest path presupposes a continuous space between  $y^0$  and  $x^n$ , but we cannot even capture the fact of  $x$ 's action being discontinuous. For  $x$ 's action to be discontinuous we must be able to say  $x$  was at  $x^1$  at  $t^1$  and at  $x^n$  at  $t^2$  and at no point between  $x^1$  and  $x^n$  between  $t^1$  and  $t^2$ . Presumably, then, quantum theory could not be mathematically represented unless it presupposed or made use of a non-reducible space-time continuum. Note, however, the demand that spatial properties be non-reducible to the properties of its occupants does not entail physical space being homoloidal, that is, indifferent to its occupants. The naive assumption behind this demand is that if any theoretical geometry is to be applicable to space then it must be applicable to all regions of space; if a characteristic of space is true of one region, it would have to be true of all other regions as well. If this were not the case, what sense could be made of the claim that there was just one space? But is it the case that the concept of a uniform and continuous space implies that every region

of space be mathematically identical with every other region of space? Plainly not: a saddle-shaped surface will have qualitatively different regions within it, but there will exist a single set of rules in accordance with which it can be mapped, the distance between any two points on it measured, etc. The independence of space from matter only requires there be unique spatial relations; if matter affects space it only follows that we cannot choose a geometry which will be applicable to that space prior to possessing some physical theory, and presumably, because the interactions of substances will determine where the 'bends' in that space are, could not apply the geometry in question without using that same physical theory.

As Kant was well aware, in maintaining space had properties which could not be derived from an analysis of bodies in their mutual relations his position approaches the absolute view of the nature of space. Speaking of the Newtonians he says: "The former thinkers obtain at least this advantage, that they keep the field open for mathematical propositions (A 40 = B 57)." Again, the point is if space is geometrizable it is because it has properties which go beyond the relational properties of its occupants, and Kant is here crediting Newton with keeping the possibility of the mathematizability open by preserving the ontological autonomy of space. And this is so whether or not the Newtonians can explain how mathematics can apply to space.

The Newtonian, absolute view of space is, however,

fraught with difficulty: what could absolute space be? Must not the Newtonians admit the existence of an eternal, infinite and self-subsistent Unding? In fact, Newton did not regard space as a substance: God is an eternal, infinite and self-subsistent substance and infinite extension is an attribute of Him.

God is the same God, always and everywhere. He is omnipresent not virtually only, but also substantially; for virtue cannot subsist without substance. In him are all things contained and moved; yet neither affects the other: God suffers nothing from the motion of bodies; bodies find no resistance from the omnipresence of God. It is allowed by all that the supreme God exists necessarily; and by the same necessity he exists always and everywhere.<sup>13</sup>

A recent commentator has glossed this passage thus:

"God's presence reaches from infinity to infinity, that is, he is everywhere present because everywhere active. Place is 'where' God is active, and space or the totality of places constitutes the abstract structure of the where of God's activity."<sup>14</sup>

In ID Kant claims God's presence in the world is virtual (ID: 19); the unity of the world derives not from God's presence, but from the world being created by Him. All his creatures then have a common bond, manifest in the universal interaction of substances through physical influxes, because they are all sustained by the common principle he has imparted to them. Although God's presence is only virtual here, Kant tacitly accepts Newton's premise that virtue cannot subsist without substance.

For indeed the human mind is not affected by external things and the world is not open to inspection to infinity, except in as much as the mind itself together with all other things is sustained by the same infinite force of one being. Hence the mind only senses external things through the presence of the same common sustaining cause. And so space, which is the sensitively cognised universal and necessary condition of the co-presence of all things, can be called PHENOMENAL OMNIPRESENCE. (For the cause of the universe is not for that reason present to all and to individual things simply because it is in the places where they are. But there are places, that is, possible relations of substances, because it is present inwardly to all things. (ID:\*22)

Kant confesses that this view oversteps the boundaries of apodeictic certitude, and approaches the position of Malebranche whereby "we see all things in God". In 1788 we find Kant clearly expressing his belief that if it is things in themselves we intuit, then space must be an attribute of God, only now this position is not identified with Newton, but with Spinoza. "Therefore, if the ideality of space and time is not assumed, only Spinozism remains, which holds space and time to be essential attributes to First Being itself and the things dependent upon it (ourselves included) not to be substances but merely accidents inhering in it (CPrR, pp. 101-2)."

We cannot know God's immediate creation, the objects he created as he created them, because these would have to be things in themselves; if they were things in themselves then they would have to be in absolute space; if things are taken to be in absolute space then pantheism is unavoidable. "One really ought not to say that God has created appearances but rather the things that we do not know to which a corresponding sensibility in us

has been assigned." And: "We cannot become conscious of ourselves as in God; rather, if we were in him, God would become conscious of us as his own determinations, and we would not be conscious of ourselves."<sup>15</sup> To preserve the independence of space from its occupants Kant must find a replacement for the Sensorium Dei; since in the Critical system man becomes the lawgiver of nature, our minds imposing order on appearances, then it can only be in reference to our sensibility and sense faculties that the spatiotemporal order of substances can be explained. Hence the forms of human sensibility come to replace the Sensorium Dei of the Newtonian onto-theology as the source of the possibility of the spatiotemporal ordering of 'empirical' substances.

Note that this brief history would make no sense unless: a) there were things in themselves, that is, non-spatiotemporal things which exist independently of our forms of sensibility, and were the 'real', immediate and direct creatures of God's creation; and b) therefore the transcendental ideality of space has ontological as well as criteriological significance.

8. Kant's position that space is nothing but a subjective condition of sensibility implies the view that in receptivity the mind (senses) clamps spatial relations onto (non-spatial) sensations: "The true correlate of sensibility, the thing in itself, is not known, and cannot be known, through these representations; and in experience no question is ever asked in regard to it (A 30 = B 45)." Since the essential incognizability

of the true correlate of sensibility must be taken as a result of the argument for the transcendental ideality of space, then, in part, the success of Kant's argument against transcendental realism depends upon the success of his argument for the ideality of space. If Kant cannot demonstrate the transcendental ideality of space, he cannot leave the true correlate of sensibility standing unproblematically outside of empirical experience. Briefly, if space is a condition for the existence of things in themselves, then the categories which must be presupposed as making experience possible for us cannot be extended unproblematically to things in themselves, that is, the subjective conditions for the possibility of experience need not be equivalent to conditions obtaining in the world itself. In effect, when Kant makes the conditions for possible experience transcendently ideal he not only achieves his Copernican standpoint, but in so doing makes this standpoint exclusive (for us): if nothing outside subjectivity corresponds to the sole conditions in accordance with which we can have experience, then no intelligible (rational) questions can be asked as to the nature of things in themselves. By parity of reasoning, if the conditions in accordance with which we can have knowledge of things do exist outside our subjectivity -- on their own, in themselves -- then we not only can but must ask if our ways of synthesizing (ordering and discriminating) spatiotemporal manifolds corresponds to the modes in which these manifolds are as such ordered.

Kant's general argument-pattern for the ideality of

space runs like this: Space is a necessary form of appearances, standing in relation to sensation as form to matter, and is thus an a priori, necessary condition for the possibility of experience. However, what is necessary and consequently a priori is mind contributed, and thus ideal. Generally Kant assumes: propositions are a priori if they are necessarily true; and a representation is a priori if it provides a necessary condition of experience, in the sense of ineliminably conditioning and so making that experience possible. If this is Kant's argument for the ideality of space, it fails on two counts: in the first place the argument for the a priority of space precedes the argument for its ideality and can therefore be divorced from it; secondly, the move from 'is a necessary precondition' to 'is mind contributed' is illegitimate.

Let us look at the argument-pattern first. Why should it follow that if something is a necessary condition of experience it cannot be 'derived' from experience? Kant's assumption is that if X is derived from experience then it must have been possible to have some experience prior to the having of X; but this is a contradiction since X is a condition for the possibility of experience. But if X is not derived from experiences then the only other possible source for the representation of X is the mind. A clear presentation of this argument is given in the following passage from Schulze, who is replying to Eberhard's charge that it only follows from space being a necessary a priori representation that

outer sensations cannot be without the concept of space; it is still possible, therefore, that the representation of space is co-existent with the representations of outer things.

...in order that I may be able to represent them as outside and alongside one another, the representation of space must already be presupposed. Now, it follows from this not merely that outer sensations cannot be without the concept of space, but that they first become possible through it, and therefore that they already presuppose it as something independent of them, i.e., as a representation a priori.<sup>16</sup>

Eberhard is right here and Kant and Schulze wrong. The force of "must already be presupposed" is exhausted by the thesis that the opposite of the state of affairs holding is inconceivable. It may be inconceivable that a representation should be outer and not in space, but that does not demonstrate space to be a contribution of the mind to experience. Kant cannot, without begging the question, put a temporal operator onto his presupposition: how could he know that prior to our being affected appearance X was not in space? The force of the presupposition can only be logical; its necessity a conditional necessity. But, again, from the thesis that we are incapable of representing outer appearances as not in space, it does not follow appearances as things in themselves are not in space. Moreover, our representation of space as a necessary condition for outer experience could be 'derived' from experience if space were a condition for the possibility of things in themselves and we evolved (with our present sensory faculties)

in an already existing spatiotemporal universe. We would have then been conditioned by a spatiotemporal world such that we could only experience that world in spatiotemporal ways. This would not imply space being reducible to the order of things in their external relations to one another; space could still be logically distinguishable from its occupants, possess whatever unique characteristics it does, and be a form of representation, that is, a dispositional function of all our sensory faculties. Finally, if space as a form of representation were a dispositional function of our sensory faculties, it would be a necessary condition for the possibility of experience: we could not be affected by any non-spatial entities given the sensory faculties we possess.

Kant's argument for the transcendental ideality of space from the synthetic a priori status of geometrical truths (A 24 and B 40-1) fares no better than his presuppositional argument. Geometry can determine the properties of space synthetically and yet a priori: different axiomatic systems (axioms plus theorems) are constructible; since we can substitute a postulate for an axiom with which it is incompatible, and derive new axioms and theorems (a new axiom system) without contradiction, then the original axiom system, and hence the original axiom, must have been synthetic. If the axiom of parallels were analytic we could not deny it and generate non-contradictory alternative systems.<sup>17</sup> Geometries, moreover, are not inductively generated, but are the results of free human constructions, and figures can

be constructed in the imagination which correspond to the rules of any given geometrical system. In this sense, geometrical truths are available a priori, prior to any particular experiences we might have with empirical spatial figures. The problem of construction will be dealt with below. Here it is only necessary to make the tired point that the existence of competing geometrical systems while affirming Kant's claim that geometrical truths are synthetic a priori, defeats his argument for the transcendental ideality of space. If there are several competing axiomatic systems, then the pure intuitional spaces about whose properties they provide knowledge cannot be themselves homogeneous and the same as the space which underlies our intuitions of empirical entities. The pure intuitional spaces in which we construct geometrical figures must themselves be spontaneous, heterogeneous products of our imagination. Therefore there must be a difference between the pure intuitional spaces of imagination and empirical space; it then becomes an empirical matter as to which synthetic a priori geometrical system is true of empirical space. This again shows how Kant simply presupposes the ideality of space: even if only one geometry existed, this would still not entail the ideality of space: empirical spaces could fail to fit the requirements of our one system, thus indicating that 'empirical' space existed outside our theoretical knowledge of possible spaces.<sup>18</sup>

9. The Grounds of Objectivity. In discussing Kant's theory of space we accepted the thesis that if space were

transcendentally ideal then no questions could be legitimately asked as to the nature of things in themselves. If space is a necessary feature of any comprehensible world, and space is transcendentally ideal, then the limits of what can be comprehended are inscribed within the circle of ideality. My reason for accepting the thesis of the incomprehensibility of things in themselves was not, then, based simply on the equation: the world = the world we know. Rather, it was based on the premise that we create the sole conditions under which things can be known, and therefore no questions can be asked concerning the nature of things in themselves. If  $m$  is a necessary feature of any world that is to be comprehensible to us, and we neither contribute  $m$  to experience nor are able to corroborate our hypotheses concerning its existence, then it follows that we cannot understand what it is we are doing when we make judgments, or, what is the same thing, we do not in fact have 'knowledge' of the world (since having 'knowledge' in the only ways we are capable of understanding presupposes the existence of  $m$ ). Skepticism, on this account, is concerned solely with our failure to find -- either a priori or a posteriori -- some feature of the world that we take to be (epistemically) necessary for our comprehension of the world. Skepticism only results through the defeat of an existential claim. This would reasonably insulate transcendental idealism against the charge that it amounted to some form of 'transcendental skepticism' on the grounds that we lacked knowledge of things in

themselves. If we do contribute to experience those features which make it possible, then all those features which have been shown to be (epistemically) necessary for the possibility of experience are existentially present. This requires Kant to make very strong existential claims if he is to be successful; but our account of his theory of space indicates that it was just this he was attempting to do. Again, the claim that  $m$  is epistemically necessary for the possibility of experience neither refutes 'skepticism' nor entails it. Skepticism only arises against the background of some previous epistemic claim about the conditions for knowledge.

This theory allows us a working account for relating things in themselves and knowledge. The transcendental realist knows things in themselves when: for every  $m$  that is a necessary feature of the world for knowledge to be possible we can discover it; if we cannot discover the requisite  $m$ 's, then we know not things in themselves but appearances only. Where we fail to discover the requisite  $m$ 's, the status of things in themselves remains essentially problematic. This is the pattern of failure that Locke's theory undergoes, and which makes of Locke, on my account, a justified skeptic. Knowledge in accordance with essences is 'real' knowledge; the method of natural history -- which proceeds by experiment and observation -- serves as an 'ideal' surrogate for real knowledge. We know what the real essences of objects are, and what would count as having a real explanation of some phenomenon, but we cannot conceive of the actual

connection between real essences and manifest properties. One might want to argue against me that the status of things in themselves is not in question in Locke's theory, but only the relationship between the things themselves and appearances. This cannot be quite right. For although we associate the insensible parts of things with the things themselves, we do not know the insensible parts of things as real essences (the problem of cohesion), and therefore explanatorily there is no difference between knowing things by sensible ideas and knowing their insensible parts. As long as we do not know the insensible parts of things as the real essences of those things we cannot say that we know the things themselves. Although Locke does think that we can know things via the natural history route, this sort of 'knowledge' does not stop Locke from falling into skepticism since judgmental practice and the method of natural history are both explained by (justified by) the theory of real essences.

10. Before going on, I must first eliminate a possible misunderstanding about Kant's theory of the "transcendental object". Kant repeatedly, throughout the First Critique, proclaims his allegiance to the correspondence theory of truth (e.g., B 83-4; B 236; B 670), and his commentators and critics, with remarkable insistence, have proclaimed him to be the begetter and defender of the coherence theory of truth. In this instance Kant has understood himself better than his commentators have understood him. Kant's discussion of the transcendental object arises in the course of an

attempt to explain the expression "an object of representation". He asks, what is to be understood when we speak of an "object corresponding to, and consequently also distinct from, our knowledge (A 104)?" And this, to be sure, sounds very much as if Kant were asking to what judgments of experience correspond. That this is based on a misunderstanding can be seen by following the progress of the development of the question.

In discussing the relation between statements and objects Aristotle emphasizes the point that it is a state of affairs in the world which makes and is responsible for the truth of a statement. Thus Aristotle at Categories 12: "And whereas the true statement is in no way the cause of the actual thing's existence, the actual thing does seem in some way the cause of the statement's being true; it is because the actual thing exists or does not that the statement is called true or false." We have seen that, in theory, Locke tends to concur with Aristotle, adding to the Aristotelian theory a special Cartesian twist: the real essence of an object is responsible for the impressions and ideas of the object we perceive, and if we knew the real essence of a thing we could deduce the effects (affections) it causes. However, we have in fact no conception of the real essences of things, and all our ideas of the real essences of things are false. Therefore we must settle for what amounts to a coherence notion of truth based on the regular production of ideas and impressions in similar circumstances. For Locke, consequently, the

grounds of objectivity and truth are 'in' the object, but these grounds are wholly transcendent to human cognition. His adherence to the theory of ideas coupled with his realism forces Locke into the adoption of a coherence theory of truth on two separate counts: i) the grounds of objectivity are transcendent to human thought; and ii) the empirical object is outside us and therefore also transcendent to human thought.

Now Kant can deal with ii, and so avoid a coherence theory of truth, by allowing us to have direct perception of objects in space. With respect to empirical consciousness there is an object in space outside me, and there is my judgment of the object; a judgment is true only if it corresponds with its object. Because the contents of judgments vary from judgment to judgment, and it is the contents of a judgment which must correspond to the object, Kant quite naturally claims there can be no sufficient criterion for the truth of a judgment (B 83). If we wish to know whether or not a judgment is true we must look and see if it is. However, the object in space when transcendently considered is a mere play of representations in us, and therefore the object cannot supply the grounds for the truth or objectivity of judgments. The identity of the objects in i and ii must therefore be broken; the empirical object in space can be the correspondent of a true judgment, but it cannot serve as the ground for the truth of judgments. The grounds of truth and objectivity will be located transcendently, in the subject; to be precise, in the transcendental unity of apperception.

Because subjective, the grounds of truth are immanent to consciousness if transcendental knowledge is possible.

The theory of ideas could not maintain a correspondence theory of truth because it barred access to things in space which were to be the correspondents of ideas in the mind; it could not account for the foundations of truth and objectivity because it identified these with the essences of things in space. Kant can maintain a correspondence theory of truth because he grounds knowledge in subjectivity, and allows us direct access to things in space. Kant's commentators assigned to him a coherence theory of truth because they failed to place his theory in the context of the theory of ideas, and to adequately distinguish between the empirical and transcendental levels of knowledge.

If this is correct, then the problem of the "object of representations" cannot be the empirical question about the real correspondents of judgments since that problem is taken care of through Kant's theory of space, but must be a transcendental question concerning the grounds of objectivity.

11. Kant's preliminary version of the Transcendental Deduction is meant to "prepare" rather than "instruct the reader" (A 98). It does so by taking him from the Lockean realistic perspective where it is the object which is the source of objectivity, to the transcendental perspective where it is the self which is the source of objectivity. The actual argument here is more or less straightforward: Beginning with the premise that the manifold of represent-

ations is presented sequentially, Kant shows that this manifold could not be represented as a manifold unless it were subjected to the threefold synthesis of apprehension, reproduction and recognition. Commencing his analysis a second time, now with the Lockean premise that we have a manifold of representations before our minds, Kant asks after the object and grounds of the unity of these representations. This is the something in general (the Etwas überhaupt) = X, which = "something I know not what". (Kant slurs over the difference between the problem of substance and the problem of real essences here.) He then argues this X cannot be something apart from our representations: either we have an intuition of X, in which case it is subject to the threefold synthesis, or we do not have an intuition of it, in which case it is irrelevant to knowledge. Therefore, the unity of the threefold synthesis is the only possible source for the grounds of the unity and objectivity of knowledge and its object. Since the incognizability of the 'real' ground of our representations follows from Kant's sole premise, viz., the temporal nature of consciousness, his argument will be refuted if we can show this premise to be inadequate: the original manifold of intuition must already be spatiotemporal and already possess its own spatiotemporal structure. Synthesis cannot be the building up of an object out of sequential bits, but must be something more like a movement from "an indiscriminate manifold of sense to discriminated items within it."<sup>19</sup> And for this position subjectivity cannot provide

the complete grounds of objectivity: a Lockean underworld of microtheoretical reality will have to be presupposed for the possibility of knowledge.

The need for Kant to claim the original manifold of intuition contains of itself no spatial spread is nowhere more evident than in his account of the threefold synthesis (A 99-103). All our representations, regardless of their origin, must be modifications of the mind; in order to be a modification of the mind a representation must belong to inner sense, and the form of inner sense is time. Therefore all representations are subject to time, and are "ordered, connected and brought into relation" (A 99) in accordance with the temporal structures of inner sense. Charitably, this could be read as saying no more than: all mental activities take time, and therefore whatever other formal features they might possess which go to individuate them as being the particular mental acts they are (e.g., as being a judging, or wishing, or remembering), they must all first possess an achieved temporal unity. The unity achieved will be a unity of representations which form the raw data of consciousness. How are we to characterize this data? Kant now brings forward his undefended atomistic premise: impressions are presented to us sequentially, one after another; "each representation, in so far as it is contained in a single moment, can never be anything but absolute unity" (ibid.). The problem which follows from this characterization of the data of consciousness is: How are we to represent this temporal manifold as a manifold? How can we represent

this manifold as diverse in a nontemporal fashion, and therefore as possessing a unity which is greater and other than the absolute unity of momentary impressions? We begin with many ones; how can we represent these many in one? We can do so only in so far as this manifold is "run through, and held together" (ibid.); this process Kant entitles the synthesis of apprehension. This synthesis by itself is insufficient; and indeed is not an isolated operation, but merely one aspect or moment of a larger synthesizing process. We cannot just unite temporally diverse representations into unity because, being temporal, one replaces another before the mind's eye; therefore the mind must be capable of reproducing past impressions, and it is these together with present impressions which are joined together to form a unitary manifold of representations. To illustrate his point Kant chooses two examples which neatly fit his paradigm: the drawing of a line in thought (a pure mental construction), and the attempt to think the time from one noon to another (a pure temporal duration, and therefore also a construction). About these he rightly asserts, if one were to always "drop out of thought the preceding representations (the first part of the line, the antecedent parts of the time period, or the units in the order represented), and did not reproduce them while advancing to that which follows, a complete representation would never be obtained (A 102)." Finally, Kant asserts that even this is not enough to achieve a whole of representings: one must also be aware in reproduction

that the reproduced impression is the same as the original. And this can only be accomplished, given the original representation and its reproduction occur at different times, if the mind is aware of the rule in accordance with which the manifold has been reproduced. For example, one must not only be aware of the previous members of a mathematical totality in counting, but one must, above all, be aware of these members as having been totalized successively. Necessarily, then, the unity of a representational manifold is the result of the synthesizing activities of the intellect, and there is no unity to be found in any object except that which is produced and imposed by the intellect itself.

Kant's examples in this section (counting, drawing a line, reckoning a duration; reading and listening to music or speech could also be included in this list) tend to obfuscate an important point, namely that the kinds of unity suitable for these mental activities need not, and I think are not, analogous and therefore generalizable to the case of perceptual consciousness of physical objects. Kant's analysis only works as a reductive analysis of perception -- appearances being a mere play of representations must, in the end, "reduce to determinations of inner sense" (A 101) --; but as a reductive analysis it begs the question at issue, for certainly what Kant must demonstrate is that all representations are mere appearances in the mind. If he cannot show this then his argument fails. Why this must be demonstrated and cannot be presupposed is evident from a

consideration of Kant's account of the reproductive synthesis of the imagination and his corresponding analysis of transcendental affinity.

Although it is merely an empirical law that various representations follow or accompany one another, we must presuppose these variations to be grounded in an invariable rule; if they were not then the empirical imagination, wherein different representations are associated with one another, would never find opportunity to exercise its powers. Similarly, in the case of perceiving an object, the atomic impressions of the object must be grounded in a rule which allows for their synthesis in reproduction. Because a whole of representing would be impossible without a synthesis of reproduction, there must be "something which, as the a priori ground of a necessary synthetic unity of appearances, makes their reproduction possible;" and this ground is to be found in the "pure transcendental synthesis of imagination" (A 101). This argument turns on an illicit shift from talk about public spatio-temporal objects to talk about private, mental representations. When gazing at, or better, walking around and inspecting an object, one must presuppose that each perspectival representation of the object belongs to the same object; and one must also remember and join these various representations together if this activity is going to be able to count as a 'walking around and inspecting one object'. But there are two ineliminable sets of presuppositions here: the first concerning the nature of the object; the second concerning the nature of

a cognitive activity. It must be presupposed that objects endure through space and time, have backs, sides, tops and bottoms, and that these various aspects of the object connect with one another in a regular and consistent fashion; indeed, in such a fashion that we can understand that they are so connected. Which is to say, objects themselves must have something in their natures which give rise to rules by which we can connect their diverse aspects. But this is not at all the same as presupposing that we can only make judgments of objects if we can connect our representations of them into a unity. No amount of inspection would lead to knowledge of an object which had a front, back and sides if we treated each view as totally disjunct and irrelevant to the one preceding it. But Kant can only reduce the first set of presuppositions to the second if he can provide an independent demonstration that appearances all "reduce to determinations of inner sense".

Once again in the presentation of the notion of transcendental affinity (A 121-2) an illegitimate slide is detectable. Kant moves from 'a multitude of perceptions must be associable if they are all to belong to one consciousness' to 'the unity of apperception (the unity of consciousness) is the objective (necessary) ground in accordance with which all appearances are associable'. Thus: "According to this principle (the unity of apperception) all appearances without exception must so enter the mind or be apprehended that they conform to the unity of apperception. Without synthetic unity (= affinity) in

their connection this would be impossible; and such synthetic unity (= associability) is itself therefore objectively necessary (A 122)." Plainly the unity of apperception can serve as the objective ground for the associability of appearances only if appearances are not percepts, but merely mental representations. Granted, representations could not be brought to the unity of apperception unless they were associable; what grounds are there for saying they will necessarily be associable? To suggest nonassociability would be impossible (incognizable) only provides a good reason for believing they will be associable, but does not provide an objective and necessary ground for their associability. Yet it is the objective ground of their associability which is in question. A Humean can perfectly well grant that we could not get on unless our representations were associable; what he wants to know is will they be associable. And in order to know the answer to this question we must have insight into the objective ground of appearances; but we do not have any such insight. We have to deal only with appearances. For Kant to say but we have only to deal with subjective representations begs the question, since the purpose of his argument is to demonstrate the correctness of the perspective of transcendental idealism. Without such a demonstration the conclusion, that "all appearances stand in thorough-going connection according to necessary laws, and therefore in a transcendental affinity, of which the empirical is a mere consequence (A 113-4)," fails. Moreover, Kant's in-

ability to push through his argument for transcendental affinity to a successful conclusion directly implies the failure of his argument for the objective validity (on one interpretation of 'objective validity'; we shall see there is another) of the categories.

Very briefly, there is, more or less, an equivalence in Kant's system between pure intuitions, the transcendental imagination, and transcendental schemata. Pure intuitions are given simply in virtue of the nature of our sensibility; the a priori manifold of pure intuition is composed solely of spatial and temporal relations; and this manifold "is at once the content of pure intuition and the form of (empirical) intuition."<sup>20</sup> The formal intuitions of space and time must be, as a system of formal relations, the result of the synthesizing activities of the transcendental imagination (the figurative synthesis); and we have just been informed that "the affinity of all appearances, near or remote, is a necessary consequence of a synthesis in imagination which is grounded a priori on rules (A 123);" those rules are the (schematized) categories. Thus the categories are the rules of synthesis of the transcendental imagination; the formal structure of the imaginative manifold is equivalent to that of the pure intuitive manifold; the forms of pure intuition determine the forms of all possible empirical intuitions. Therefore the objective validity of the categories presupposes the success of the reductive argument of the Deduction: if the synthetic unity of the manifold is not objectively necessary, then

neither are the categories which synthesize that manifold.

There is worse to follow. Although Kant occasionally mentions space in the course of the Deduction, his actual argument there (in the A version), and the argument of the Schematism are based strictly on temporal considerations. Since all representations must reduce to determinations of inner sense, this is not surprising. Once they are so reduced they become subject to the transcendental determinations of time (which is the form of inner sense), which is precisely what the schematized categories are (A 138-9 = B 177-8). How then can representations become spatial? If we have only to deal with temporal manifolds, then representations can only 'appear' in space in virtue of some characteristic of their temporal order (being an 'objective' temporal order in accordance with the cause and effect relation, for example) -- which is absurd. Hence the misrepresentation caused by Kant's examples of counting, constructing, etc. Kant's theory of synthesis works only for those cases where the data to be synthesized do not of themselves possess spatial characteristics which would of necessity constrain a percipient in his perception of them.

The reduction of all representations to inner sense explains why Kant thought, in the Critique of Teleological Judgment, there should be only one unique set of categories: all the data of experience must be presented to us sequentially and atomically (A 99); therefore only a categorial system which ranges over discrete units is

acceptable. Consequently, organisms are not properly synthesizable. The unities with which we have to deal, according to Kant, are those that are run through and held together by rules which relate their discrete momenta; these rules constitute the forms of the sole universal and relational features which 'objects' might possess. How could an organism fit into this system? Notice, the hegemony of the causal categorial framework stems not from any features of it as such, but rather from the prior reduction of representations to inner sense, and the resultant demand that all data be characterizable in a simple sequential fashion. It is sequential presentations qua sequential which are the objects of synthesis; it is their purely (temporal) linear character which is overcome through the synthesis of apprehension and reproduction. The failure of Kant's reduction would apparently entail the failure of any possible (a priori) uniqueness argument for the categories.

12. Does the thesis that all representations must be reduced to determinations of inner sense entail denying that perceived objects constrain percipients? I think the fact that we are concerned here only with 'representations' is enough to lead us to an affirmative response to this question. Intuitions are representations which relate immediately to objects, and concepts are representations which relate mediately to objects. Judgments result from the syntheses of given representations. All representations in Kant have what Brentano

designated as the property of being intentional: they refer, or at least purport to refer, to an object.<sup>21</sup> If this does typify Kant's view, then his theory is doomed from the start. If referential opacity is taken as the index of intentionality, it follows that all perceptual judgments are referentially opaque -- which is nonsense. If I see a man in a blue coat, and the man in the blue coat is the Prime Minister, then I see the Prime Minister, whether or not I know that the man in the blue coat is the Prime Minister. Generally we take it that perceptual acts go directly to their objects in at least this limited sense. Of course Kant would claim that I am here confusing transcendental and empirical levels since for him we are in immediate contact with objects at the empirical level. But it is difficult to see the cash value of this claim given his theory of synthesis. I will not here press this point since I think Kant's discussion of the transcendental object does show that the point of his theory was to eliminate the object of knowledge as a source of constraints. The elimination of the object as a source of constraints is not a result of Kant's idealism, but rather the central motive and driving force of it; and the referential opacity of perceptual judgments then falls out as a natural consequence of Kant's theory of objectivity.

Taking the Lockean view as his point of departure, Kant begins by asserting the nonequivalence between the direct object of knowledge and the object as such. The object as such can only be thought of as "something in

general = x, since outside our knowledge we have nothing which we could set over against this knowledge as corresponding to it (A 104)." Now once the object as such is separated from the object of consciousness a difficulty arises. "The relation of all knowledge to its object carries with it an element of necessity; the object is viewed as that which prevents our modes of knowledge from being haphazard or arbitrary (ibid.)." How can an object of which we are not aware constrain us to perceive it in a non-arbitrary fashion? The Lockean answer to this question is that it is not the object of perceptual consciousness which constrains our view of it, but rather the objective ground of the object of perceptual consciousness which constrains us. And if this is so, then our knowledge of the physical object as such will not be a direct function of perceptual consciousness; it will be mediated by theories which are not limited to the simple requirements for perceptual knowledge.

Locke took it that the ground of the connections between different representations, which is the same as the ground of the relation between those representations as a whole and their object, was the object itself, a substance (a 'that') in the external world which had a unique real essence (a 'what'), which defined that substance as being the particular kind of substance it was. There had to be for Locke a substance with a real essence to explain the objectivity of knowledge, although Locke was unable to explain what such a substance might be, and claimed, furthermore, that all our ideas of the real

essence of a thing were false. Locke's skeptical dilemma gives Kant the chance to take the initiative from him. Since we have to deal only with the manifold of representations, and since the x (the object) which corresponds to them is nothing to us -- being as it is something which has to be distinct from all our representations -- the unity which the object makes necessary can be nothing else than the formal unity of consciousness in the synthesis of the manifold of representations (A 105).

Kant argues: We know nothing can be represented unless it is brought to unity in consciousness through the threefold synthesis; the formal unity of consciousness being itself equivalent to the general rules of synthesis. Thus the concept of an object of representation is the same as the formal unity of consciousness in the synthesis of representations. Because there is nothing more in our conception of an object than there is <sup>i<sup>n</sup></sup> the synthetic unity of a manifold of representations, then producing such a synthetic unity is all that is involved in or implied by having knowledge of an object. The unity of any particular object, then, is derived from (derivative of) the rule by which that object can be constructed in imagination (Kant employs the example of the rule for the construction of a triangle); the concept of a particular kind of object is just our consciousness of that same rule. Thus the Lockean notion of substance comes to be replaced by the concept of an object in general, that is, the formal unity of consciousness in the synthesis of representations; and the Lockean notion

of real essence is replaced by the rule of construction for any particular kind of object.

Kant also claims all necessity must be grounded in a transcendental condition, and therefore there must be a transcendental ground upon which the necessary unity of consciousness in the synthesis of representations rests. This transcendental ground Kant entitles the 'transcendental unity of apperception', which is a "pure original unchangeable consciousness", which must precede all data of intuition (A 107). Furthermore, Kant thinks of transcendental apperception as a fixed and abiding self which is continuously present (as an identical self) throughout the flux of inner appearances. Incredibly, after characterizing transcendental apperception as a formal condition for the possibility of experience, Kant says: "This transcendental unity of apperception forms out of all possible appearances, which can stand alongside one another in one experience, a connection of these representations according to laws (A 108)." Kant has here confused a formal requirement for the possibility of experience with the real ground of human experience. Kant's mistake comes from identifying the formal requirements for judgment (the unity of consciousness) with their ontological ground. Once these two are conflated and then lumped together, it is very natural to suppose, as Kant does, that there is a transcendental self with spontaneous powers, which, remaining the same through time, forms a unity out of the manifold of representations.

What Kant is after in his theory of transcendental apperception is clearly represented in the following passage.

For the mind could never think its identity in the manifoldness of its representations, and indeed think this identity a priori, if it did not have before its eyes the identity of its act, whereby it subordinates all synthesis of apprehension (which is empirical) to a transcendental unity, thereby rendering possible their interconnection according to a priori rules. (A 108)

There are three relatively distinct requirements here which must be kept separate if Kant's argument is to be understood. i) There must be a unity to the rules of synthesis, that is, a unity to the rules of judgment, in virtue of which a manifold of representations can have the unity of an object. These unitary rules are equivalent to the concept of an object in general. ii) Judgments could not carry consistent import unless the same general rules were employed in all cases; therefore the concept of an object in general must remain the same through time. iii) There must be a real ground to i and ii. Only under the condition that requirements i, ii and iii are fulfilled can the mind think its identity in the manifoldness of its representations.

The fulfillment of these three conditions is a far cry from Kant's demand that there be a pure original unchangeable consciousness which precedes the data of intuition. Rather, these three conditions are the three logical moments of the "identity" of the acts of mind, they articulate what is involved in the unity of the acts of mind. There must be sufficient unity in each

object of consciousness for the mind to recognize and distinguish itself from that object; and objects can only receive or have this unity in virtue of being objects of judgments. Thus that objects be objects of judgments is a necessary condition for self-consciousness. That thesis has an ontological underside, namely, that the unity of consciousness and the unity of the object are only possible through an act of judgment, only becomes evident in the second condition. If the mind participated in the vicissitudes of its object, if it were strictly passive in relation to its objects and simply discovered a unity in them, then it could never reflectively distinguish itself from them. Therefore the unity of objects cannot be simply found or immediately perceived, for such a unity would be meaningless or irrelevant to us. The unity of objects necessary for self-consciousness is an epistemic unity, a unity objects might have in virtue of being discriminated through the employment of the semantical apparatus of reference and predication. And this plainly would be useless unless all objects were judged in accordance with the same semantical apparatus. Hence the same logical functions must be employed to discriminate all sensory manifolds, and this is only possible if the qualitatively same act is employed in all cases. For this to be the case we must, lastly, presuppose that there are spontaneous powers of the mind which remain the same through time.

Objects have the unity of objects of judgments; the laws of judgment remain the same through time, and these

laws are grounded in the spontaneous powers of the mind. The transcendental unity of apperception is exhausted in the satisfaction of these three requirements. The identity of the self throughout the flux of experience involves no more than the same functions of unification being employed throughout, and we know and remember that this is the case. Only an account such as this can prevent the substantializing of the unity of consciousness: "The identity of consciousness of myself at different times is therefore only a formal condition of my thoughts and their coherence, and in no way proves the numerical identity of my subject (A 363)."

With this Kant feels entitled to assert that the transcendental object = x, which must remain the same throughout all knowledge, and confers "upon all empirical concepts in general relation to an object, that is, objective reality," is nothing but the unity of consciousness (the general rules for the synthesis of any manifold = the concept of an object in general) (A 109). Of course, if representations cannot be reduced to determinations of inner sense, then the unity of consciousness cannot be an adequate ground for objectivity. But the situation is worse than this (Kant's claim: my counter-claim): within Kant's argument here there is an illegitimate shift from existential to formal considerations. Kant first characterizes the transcendental object = x in existential terms as follows: appearances are the only objects of which we have an immediate cognition; because they are not things in themselves they must in turn have their

object. This object cannot be intuited or it would be but another representation; therefore, it must be "the non-empirical, that is, transcendental object = x (ibid.)." Again, in his discussion of Phenomena and Noumena, it is plain Kant first defines the transcendental object as the non-sensible object of a sensible intuition, following thus the typical Lockean method of identifying the thing in itself.

All our representations are, it is true, referred by the understanding to some object; and since appearances are nothing but representations, the understanding refers them to something, as the object of sensible intuition. But this something, thus conceived, is only the transcendental object; and by that is meant a something = X, of which we know, and with the present constitution of our understanding can know, nothing whatsoever, but which, as a correlate of the unity of apperception, can serve only for the unity of the manifold in sensible intuition.  
(A 250)

Thus Kant follows the same path here as he does in the Deduction: of the transcendental object = x we can know nothing given the sensible, discursive nature of our understanding -- the existential claim that there is a something which is the 'causal' ground of representations, but because non-sensible (e.g. non-spatial) cannot be an object of intuition. However, as the correlate of the unity of apperception it can serve "only for the unity of the manifold in sensible intuition" -- the shift to the formal claim and the consequent identification of the transcendental object with the transcendental unity of consciousness. On this account Kant is guilty of two errors: he fails to eliminate the transcendental object

as the causal ground of our representations, and he conflates formal and existential items. This latter conflation is necessary for Kant: if there is no thing which underlies different representations and unifies them, then only the unity of consciousness can do so.

13. The theory of transcendental idealism forms the core of Kant's thought. It is intended as a response to the scientific essentialism of Locke and the metaphysical essentialism of Leibniz. All three theories are concerned with the grounds of world order and, by extension, the grounds of objectivity. If these grounds cannot be found in the essential, constitutive predicates of the objects of knowledge, then they must be found in the essential predicates of the knower, in his constituting activity of knowing. And this only makes sense if the objects of knowledge in themselves lack any and all essential properties. By hypothesis, if F is an essential property of x, and following Locke we agree that F is causally responsible for x's other properties G, H, ..., etc., then to know x is to know how and that F grounds G, H, ..., etc. This implies that since x is F necessarily, it is only because it is the F it is that x can be known. We do not have to know x is F in order to make objective judgments to the effect that x is G, and x is H; objective judgments can be made without our being able to specify at a given time the grounds which justify those judgments and make or allow them to be objective. As a matter of fact x is G; but if x is F necessarily, and x's being F explains why x is G, then x is G necessary

qua x being the F it is. Now if all necessity in Kant rests upon a transcendental condition, then I think it does follow (as we will see momentarily) that it is incumbent upon him to show that there are no necessary F's which any x's are; he must, that is, show that the realm of things in themselves is structurally amorphous, or, what is the same thing, that it is lacking in all essential properties. This shows, if nothing else, that talk of different modes of knowing (discursive knowing versus intellectual intuition) is irrelevant; the real distinction must be between a world of contingent entities lacking any necessary properties, and a world of entities possessing necessary properties. That Kant really does think this to be the problem will be borne out in more detail in the next chapter.

I have been suggesting that Kant must not only (analytically) deny that we can know anything of things in themselves, but that he must also deny that there are any essential properties of them in general. That this is correct, and that it yields the central antinomy of Kant's thought can be quickly shown. To ground all necessity on a transcendental condition (= to make all necessity intentional) entails making us the creators of world order; therefore without us there would be no world order. But if without us there would be no world order, then what is the cash value of the claim that objective knowledge or a science of nature is possible? In other words, unless there is an independently existing world order the claim that we have knowledge of the world

is without significance. If, on the other hand, we do not (a priori) create world order, but simply know the real order of things under some limited description (because of the limitations of our discursive intellect), then surely it is that world order itself and not our perspectival grasping of it that is the source of perceived (known) order. If, that is, there is a necessary order amongst things in themselves, then what is the cash value behind the claim that all known order (necessity) rests on a transcendental condition? Kant could of course have it both ways, but only under the condition that he denied us objective knowledge of the world or he denied that a science of nature is possible. But in this case transcendental idealism would be a transcendental skepticism in the strong sense, and it is far from obvious that this was Kant's intention. Later we shall see this same antinomy again in the form of a problem about the status of the ideas of reason.

In order to make his position consistent Kant sometimes denies that there is a reality existing outside consciousness; that is, he sometimes accepts the natural consequence of his theory that the known world is an auto-affection of the soul.

But although extension, impenetrability, cohesion, and motion--in short, everything which outer senses can give us--neither are nor contain thoughts, feeling, desire, or resolution, these never being objects of outer intuition, nevertheless the something which underlies the outer appearances and which so affects our sense that it obtains the representations of space, matter, shape, etc., may yet, when viewed as noumenon (or better, as transcendental object), be at the same time the subject of our thoughts. That the mode in which our outer sense is thereby affected gives us no intuition of representations, will, etc., but only of space and its

determinations, proves nothing to the contrary. For this something is not extended, nor is it impenetrable or composite, since all these predicates concern only sensibility and its intuition, in so far as we are affected by certain (to us otherwise unknown) objects. (A 358)

By tacitly affirming monadism here, Kant begs the original question with which he began, namely, under what conditions can we know things not of our own creation. Although auto-affection is not absolute creation, it does seem to be the case that the objects of empirical thought are creations of the subject who (empirically) thinks them. It is difficult, however, to conceive of any metaphysic apart from monadism which is compatible with Kant's epistemology, for only monadism (properly interpreted) possesses the kind of phenomenalism which gives the known world complete autonomy from the realm of being while allowing that the known world is dependent on the realm of pure being.<sup>22</sup> Unlike Leibniz, however, Kant does not have an account of how substantial entities provide foundations for phenomena. He is not even allowed to say that the noumenal world has a grounding function with respect to phenomena, for this would be to deny the purported efficacy of the transcendental unity of apperception. Transcendental knowledge is not knowledge of noumena.

Thus, although Kant's theory should be compatible with any metaphysical system (as a noumenal substrate to the phenomenal world), it looks as if this is not the case: things in themselves cannot possess any material (outer) predicates. But for this conclusion Kant cannot

legitimately argue, for doing so would entail making synthetic a priori claims about entities as such. Note again that Kant cannot make the non-spatiality of things in themselves only an analytic truth because this would put into question his claim that all necessity is intentional and that the self provides the conditions for objectivity. On the other hand, some account of alterity must be provided: either the alterity of matter and space or the substantial alterity of monadism. Matter and space are ideal. Monadism might be compatible with Kant's idealism, but surely the theories of pre-established harmony and substantial mirroring are required to make monadism work. Kant, at any rate, possesses a very good argument against monadism. Therefore he shall have to accept matter and space as the source of alterity in the world. To do so will mean making at least one of these elements transcendentally real; but this would ultimately involve him in affirming some form of essentialism.

14. Transcendental Idealism and Ontology. In way of a transition to the next chapter, I would like to attempt to clarify my claims about the relations between transcendental idealism, ontology, and objectivity. Since my analysis concurs with that of Heidegger, a brief review of his interpretation in Kant and the Problem of Metaphysics will serve to accomplish this end.

Kant's transcendental philosophy is for Heidegger fundamental ontology; the analysis of Dasein in Being and Time is coextensive with the articulation of the transcendental imagination in the First Critique. The

transcendental imagination serves as the common root which joins together pure intuition and pure understanding into a complex whole, and thus also serves as the origin of these two modes of representation. The time structure of the transcendental imagination marks and constitutes, according to Heidegger, the finitude of man. Accordingly, Heidegger's unpacking of the Kantian thesis 'the conditions for the possibility of knowledge are the same as (or: are at the same time) the conditions for the possibility of objects of knowledge' states: the categories characterizing the universal features of all objects of knowledge are themselves the essential predicates (categories) of man (as finite knower). To state this in the order of metaphysical dependency: the essential predicates constituting man in his finitude form the horizon within which objects can be known. To put Heidegger's central thesis in this abbreviated way makes it sound as if Heidegger is simply laying an 'ontological' vocabulary over the impositional thesis (space and time as 'clamps') of the First Critique. In fact, this is almost precisely what Heidegger does, although it is not what he intends to do. However, if I am right in insisting that Kant must somehow displace Locke's real essences, then it follows that Heidegger is right in attempting to make epistemic predicates into ontological predicates, for only through such a transposition can subjectivity ground (institute the horizon of) knowledge and objectivity. How, then, does Heidegger connect finitude and objectivity?

Heidegger takes it that we must explain human knowledge not only as knowledge but as peculiarly 'human' as well. It is of course true that any analysis we give of our knowledge will be an analysis of human knowledge. But this only means that we can provide some sort of analysis of knowledge without at any point explaining how this form of access to objects is (if it is) unique to us. Human knowledge is delimited in the first place by the fact that we as knowers are finite; we do not create the objects of knowledge. All objects of knowledge exist prior to and independently of our acts of knowing them. Therefore we must be equipped with faculties that allow us to be affected by objects. If we were to give an empirical (non-ontological) analysis of this fact we might state that human intuition is finite because (as a matter of fact) it takes place by means of sensible affection; we cannot know anything unless we are first affected by it, and this is what it 'means' to say that human knowledge is finite. Heidegger's way of making this 'matter of fact' claim into a piece of ontological knowledge is to reverse the order of dependency. "Human intuition, therefore, is not 'sensible' because its affection takes place through 'sense' organs. Rather, the converse is true: it is because our Dasein is finite... that it must of necessity receive the essent, that is, offer it the possibility of giving notice of itself... The essence of sensibility lies in the finitude of intuition (KM, p. 31)." This means that we cannot explain the finitude of human

knowledge through recourse to the fact that we must passively receive objects, but rather must 'explain' our passive sensibility through some prior characterizing feature which constitutes us as finite. And similarly with the understanding: the "index" of its finitude, its discursiveness whereby general concepts are required for the representation of an object, is not, so to speak, the cause of our finitude, but an 'effect' of it.

Thought and intuition form the two diverse modes of human representation which when joined together allow us knowledge of objects. For knowledge to be possible there must be a common root connecting thought and sensibility, and this common root, we now know, will account for (constitute) the finitude of these two forms of representation, and so of human knowledge generally. The common root linking thought and sensibility institutes the finitude of human knowledge; but in so doing it must also (therefore) institute the conditions of human knowledge, that is, the 'horizon' within which things may present themselves and be known. Since this relation between the ontological constitution of finitude and objectivity is our central interest here, let me offer an extended quotation from Heidegger's text.

(I)n order that this essent can be encountered as the essent that it is, it must be "recognized" in advance as essent, i.e., with respect to the structure of its Being. But this implies that ontological knowledge...is the condition of the possibility that an essent can, in general become an object for a finite being. All finite beings must have this basic ability, which can be described as a turning toward... (orientation toward...) which lets something become an object... If the possibility

of ontological knowledge is based upon pure synthesis, and if it is ontological knowledge which makes the act of objectification possible, then the pure synthesis must manifest itself as that which organizes and supports the unified totality of the intrinsic, essential structure of transcendence. Through the elucidation of the structure of pure synthesis the inmost essence of the finitude of reason is revealed. (KM, p. 74-5)

The ontological knowledge which creates the horizon of objectivity must possess both the characteristics of human knowledge: it must be receptive like intuition (sensibility), and it must be spontaneous (or creative) like the understanding. Thus Heidegger claims that time, as an act, is both receptive and formative. "This pure intuition solicits itself by that which it intuits (forms) and without the aid of experience. Time is, by nature, pure affection of itself (KM, p. 194)." If we grant this, then must we not admit that we have the power to create our own ontological horizon in much the same way as an intuitive intelligence creates the objects of its knowledge? It is, at any rate, interesting to note that Kant believes that only a being possessing the power of intellectual intuition could know the world in its (or as a) totality; and that space and time, as pure intuitions, are sensible totalities which contain an infinite number of possible representations within themselves. Again, then, we find space and time functioning as 'ideal' surrogates for an infinite and immediate intellectual intuition. Heidegger, however, seems to deny that we create time (or space). "As pure self-affection, time is not an active affection concerned

with the concrete self; as pure, it forms the essence of all auto-solicitation. Therefore, if the power of being solicited as a self belongs to the essence of the finite subject, time as pure self-affection forms the essential structure of subjectivity (ibid.)." In other words, time structures and creates human subjectivity; human subjectivity does not create or generate time.

In part, at least, I think Heidegger has sharpened and exploited an insight into the nature of human subjectivity which is lurking darkly within the pages of the First Critique, namely, that time is the medium and horizon within which we can confront objects. And to put Kant's insight into these terms does prevent it from disintegrating into the mentalistic (psychologistic) excesses of material idealism. What we must now ask is whether, in so doing, Heidegger has managed to escape the obvious absurdities of the impositional thesis concerning the relation between time (and space) and things in themselves. Since human cognition is 'essentially' finite, it follows that there exists another side to the objects of human knowledge. This other side of objects is necessarily hidden from view because human cognition is essentially finite. "The phrase 'behind the appearance' signifies that finite knowledge as finite necessarily conceals and, indeed, from the first, conceals in such a way that not only is the thing in itself not completely accessible to such knowledge, it is not accessible to it at all (KM, p.38)." In order for this claim to be coherent Heidegger must assume that a divine intelligence

would perceive something different than we do if it were to perceive the 'same' objects we do (KM, pp. 35-8); and this claim we have already seen to be unjustified. More importantly, once the admission is made that objects have another side to them, then necessarily the question of the grounds of knowledge and objectivity becomes unanswerable. For it must be an essential property of an object that allow it to become an object of human knowledge; but this means that it is a property of the object as a thing in itself which allows it to become an object of human knowledge, for if it were an essential characteristic of an appearance that it could be an appearance, then it would no longer be an appearance but a thing in itself -- it would no longer have another side to it.

If an object can be known, then there must be some features of that object that allow it to be known. While it is true that we cannot know those features of objects that allow them to be known without first knowing the object, it does not follow from this that in coming to a fuller understanding of an object we cannot learn what those features of it are which permit it to be known. Such knowledge, however, would have to be a posteriori. Heidegger and Kant both make the assumption (B 303; KM, p. 129) that essential predicates of an object if known at all must be known a priori. Hence Kant's charge against "traditional ontology" that it "presumptuously claims to supply, in systematic doctrinal form, synthetic a priori knowledge of things in general (for instance, the principle of causality)." While this characterization

fits Leibniz, it is hardly true of Locke, who regarded the corpuscularian hypothesis (and hence the doctrine of real essences) as an empirically justified theory drawn from experimental inquiries.<sup>23</sup> What the theory that essential properties can be known a posteriori does require is that we be able to distinguish (employing the language of the tradition) knowing objects in accordance with their predicates (per accidens) and knowing them in accordance with their essences (per se). But for the modern realist tradition this is just the difference between judgmental and scientific knowledge; and, as we shall see, this is a difference which Kant comes very close to accepting.

## Science, Ideas, and the Unconditioned

## A. The Perspective of Science

1. In the last chapter we argued that Kant's transcendental idealism formed the core of an anti-essentialist program. In this chapter we shall explore some of the ways in which Kant's theory presupposes the truth of essentialism (transcendental realism).

Near the end of the last chapter we noted Kant's indifference to what earlier had looked like a sound argument against transcendental idealism -- the argument from auto-affection. One possible interpretation of this indifference is that Kant did not wholly appreciate the theoretical demands of his own position; he did not see the full range of conditions which would have to be met if transcendental realism was to be defeated. Perhaps the reason for this is that Kant regarded transcendental realism as a metaphysical thesis without unique or significant implications for the problems of objectivity, or, at least, without positive implications for the problems of objectivity. This would certainly be consonant with the generally accepted view that Kant remained a realist of some unspecified metaphysical sort throughout the Critical period. If Kant did remain a realist throughout the Critical period, then we might expect him to hold that the transcendental unity of apperception (his theories of space, time, categories, etc.) provides for some but not all the necessary conditions for the possibility of knowledge. This comes through clearly in Kant's

philosophy of science, where the conditions necessary for a science of nature (for the rationality of science) go beyond those laid down for the possibility of knowledge in general in the *Analytic of the First Critique*. This argument of Kant's will be recounted (in part only) in section A of this chapter. In section B I shall demonstrate that this argument is unsuccessful: Kant cannot secure the necessity of empirical theories with anything less than a complete affirmation of transcendental realism.

Like Kant, Locke wanted to separate judgmental knowledge (and natural history) from scientific knowledge proper. His theory came to ruin because of the inconceivability of the relationship between the real essences of objects and their manifest properties. Later I shall argue that this inconceivability is wholly due to Locke's characterization of real essences, i.e., his atomistic ontology. This ontology is incapable of supporting the theory of knowledge Locke erects on its basis. In the context of his philosophy of science Kant tacitly admits that the grounds of world order ultimately reside in the ultimate objects of reality. In saying we lack knowledge of things in themselves it is not obvious that Kant means anything other than what Locke meant when he claimed we lacked the required knowledge of the real essences of things: we know things only in respect to their accidents, and not with respect to their essences. The results of Kant's analysis are much like Locke's: a lack of harmony between ontology and theory of knowledge; basic epistemic

practices (judging, induction, theorizing, experimental testing) are unsupported by the given ontology. Since these practices are not ones we can easily give up, or even imagine giving up, then to make these practices reasonable we will have to alter the given ontologies.

Speaking this way does, of course, suggest that Kant had an ontology that was neither immediately derived from nor a direct consequence of his theory of knowledge. Locke began with a commitment to atomism; Kant begins with, and his transcendental idealism presupposes, the ontology of the conditioned and the unconditioned. After demonstrating the existence of this ontology and examining its nature in section B, I shall, employing Kantian materials, demonstrate its falsity in section C.

2. As a result of his investigations in the First and Second Critiques Kant has generated two sets of a priori principles: those determining the realm of nature in general, and that determining the proper and coherent functioning of the will. The result may be limned in the following way: in the movement from Critique to Critique there is a corresponding movement towards completion, in the sense of a determination of areas or realms of experience not accounted for -- given a legislating principle -- in the previous Critique. In the First Critique Kant offers determining principles (categories) for the empirical manifold of nature: that which, once determined, becomes the objects of ordinary, empirical judgment. What remains unaccounted for at that juncture is human activity: the practical as opposed to the

theoretical aspect of human experience (Intro., I). Inquiry into the practical sphere of experience yields a determining principle for the manifold of desires (the will; *ibid.*), which we learn is determined by a concept of the supersensible, though no actual, theoretical knowledge of the supersensible is thereby attained. For this it would seem to follow that there exist no more realms of experience remaining in need of determination by a priori principles: if we possess a priori principles for the determination of what there is, and an a priori principle for the determination of what there ought to be; if we have, then, legislating principles for the realms of theory and practice; what area of human experience could remain in need of a legislative principle? The first two Critiques would appear to have divided and conquered all there is of human experience capable of and requiring subjection to a priori (philosophic) legislation. Yet Kant believes this is not quite the case. What has been left undetermined, according to Kant, is the particular and contingent in nature in respect of its particularity, and thus in respect of the relations obtaining amongst the particular empirical laws governing nature.<sup>1</sup> It will be the task of the transcendental principle of judgment, the principle of the finality of nature, to provide a rule and a method whereby the particular laws of nature can be investigated and ordered into a systematic whole. As a first approximation, this goal is necessary because only if the various empirical laws ranging over the diverse natural

processes taking place in the universe can be brought into systematic relation with one another will we have any good reason for believing that these 'laws' have objective validity. If they are objectively valid, then they explain the 'particulars' which fall under them; thus the problem of the particular qua particular is the same as the problem of justifying the validity in general of the empirical laws which explain particulars. If we do not understand in what the explanatory power of empirical laws consist, then we do not 'understand' particulars in their specificity.

Kant thinks that to some extent artworks are similar here to particulars in nature since they are individual entities which in their specificity (as artworks) remain untouched by the legislating principles of nature or the will, that is, they are undetermined in their particularity. Kant suggests, with some architectonic strain, that this provides grounds enough to assume that the same cognitive faculty which gives a rule to the manifold of empirical laws likewise gives a rule to the manifold of feeling, thereby prescribing the proper interpretative principles for judgments of works of art. Moreover, the very fact, Kant believes, that we find ourselves in need of principles of judgment in order to determine the particular qua particular indicates the existence of a gap or an area of indeterminacy between the realm of understanding (nature) and the realm of reason (freedom and the supersensible); indeed, the simple independence of these two realms from one another is enough to suggest

the existence of such a gap.

Albeit, then, between the realm of the natural concept, as the sensible, and the realm of the concept of freedom, as the supersensible, there is a great gulf fixed, so that it is not possible to pass from the former to the latter (by means of the theoretical employment of reason), just as if they were so many separate worlds, the first of which is powerless to exercise influence on the second: still the latter is meant to influence the former -- this is to say, the concept of freedom is meant to actualize in the sensible world the end proposed by its laws; and nature must consequently also be capable of being regarded in such a way that in the conformity to law of its form it at least harmonizes with the possibility of the ends to be effectuated in it according to the laws of freedom. (Intro, II)

Judgment, then, has a double task to perform in the Third Critique: giving a rule for the comprehension of particularity, and providing a link between the realms of understanding and reason. I think what Kant intends to show in the "Introduction" is that in fulfilling its first legislative task, judgment thereby concurrently accomplishes its mediational task.

Concerning this somewhat obscure and rather dubious analogical argument I shall, on the whole, say little, not only because so much of it concerns problems unique to Kant's aesthetics, but above all because the joining "of the legislations of understanding and reason by means of judgment" (Intro, IX) is accomplished via the well-trodden circuitous path of the supersensible. Here, as elsewhere, Kant's employment of the supersensible serves more as a hindrance than a help to the positive appreciation of what he has to say; more importantly, the bringing of science under the auspices of the categorical imperative is a wholly puzzling affair when transacted by

the medium of the "we know not what", yet when put in the context of Kant's moral philosophy as we have presented it, stripped of its attachment to the supersensible, it is an extremely simple, plausible, and to my mind, persuasive argument. Again, once persons are recognized as ontologically independent of nature, as the argument for 'spontaneity' was meant to illustrate, then what needs to be joined are not 'worlds', but types or forms of activity. For these reasons I will limit my discussion to the problem of the rationality of science, and attempt to establish the union of the 'is' and the 'ought' only with respect to it.

Our first task is to try to sharpen an understanding of why Kant regards the particular qua particular as problematic.

3. Experience, according to the First Critique, is a synthetic unity standing under and existing in virtue of the transcendental laws of the understanding. The systematically interrelated necessary rules of the understanding bring an intuitional manifold of representations to the unity of a judgment; but it is only these rules of judgment (and not the unified judgment) which partake of necessity. While the categories are determinative for the possibility (of our knowing) of a certain experience, they are clearly incapable of determining the 'actuality' of that experience; while a specific event must be taken as conforming to the a priori laws of the understanding, those laws are not capable of determining the event itself. Although it is comprehensi-

ble that our minds (transcendentally) legislate the general form of what any experience, to be an experience, must look like, they cannot legislate the brute existential datum of an event. Thus we arrive at the familiar Kantian formula that judgmental knowledge consists of form and matter, thinking and sensing: the understanding, through its necessary laws of synthesis, provides the formal part, and sensibility the material and contingent part. Resulting from this combination of form and matter is a judgment of a contingent state of affairs. What is important to notice here is that there is nothing necessary about the state of affairs judged. The necessity involved in the category of causality is the necessity of our applying that category, which is to say, the necessity of our understanding some event as enmeshed in a causal order of things, and not the necessity (of the laws) of that causal order. Thus far, then, causal necessity exists only on the transcendental level; and this is as we should expect if we assume that transcendental questions (e.g., How is experience in general possible?) are only capable of receiving transcendental, not empirical, answers. Generally speaking, Kant is careful to indicate this difference between the transcendental and the empirical:<sup>2</sup> "I do not here assert that these representations necessarily belong to one another in the empirical intuition, but they belong to one another in virtue of the necessary unity of apperception in the synthesis of intuitions, that is, according to the principles of the objective determination of all

representation (B 142)." The necessity adhering to experience is there in virtue of the categories, and does not adhere to an experienced event as experienced (in judgment). Once having recognized this ambivalence in Kant's argument it is tempting to read him as saying that because of the necessity of the causal principle (as a presupposition of all experience) there must ultimately be a causal necessity which attaches itself to the existence of any event 'here-now', admitting, to be sure, that we might well fail to locate such a necessity properly, although this still would not entail its not somehow being there. But this is too strong: if science were to be inductively generated, then the theories constructed by generalizing over certain features of past experience could be no stronger, no more necessary than whatever one might legitimately say about the original individual events themselves; and these we have just seen are, for all intents and purposes, contingent. Inductive procedures alone, even with whatever categorial sanction they might possess, can never for Kant yield scientific laws carrying necessary authority: "for although they (empirical concepts) are formed according to law (viz., the categories) they are not themselves legislative, but the rules (inductive generalizations) founded on them are empirical, and consequently contingent" (Intro, II).

There is, however, no reason to deduce from this argument that there is no such thing as natural necessity, nor that Kant believed that natural necessity, in some

form or other, did not exist; only that, whatever its character, it does not follow in any obvious or unambiguous way from the necessity ascribed to the category of causality. Natural necessity for Kant originates in the process of theory construction and in the practice of experimental investigation; necessity, in those contexts, is imputed to causal laws on the grounds that we could not understand these laws as laws of nature unless we held them to be necessary.

These rules (empirical laws of nature), without which we would have no means of advance from the universal analogy of possible experience in general to a particular, must be regarded by the understanding as laws, i.e., as necessary -- for otherwise they would not form an order of nature -- though it be unable to cognize or ever get an insight into their necessity. (Intro, V; emphasis mine)

Thus we not only 'inject' necessity into a putative causal sequence in order to create its possibility, but we 're-inject' necessity into a putative causal law in order that it may approximate to a law of nature (cf., A 112-3); and we do this whether or not we have any actual insight into the 'nature' of physical entities which would allow us to understand in what the necessity of the laws ranging over them adheres. Unfortunately Kant never makes explicit what the real ground of natural necessity might be and thus never goes far beyond and far enough beyond his postulational view. Later I shall build a large part of my argument on a theory of De Re necessity to complement Kant's postulational theory. For the present it seems fair to assert that Kant's argument to the effect that the objects of experience

conform to the necessary rules of the understanding does not entail, even in principle, that causal sequences are describable as subject to empirical laws, "for that there are any such laws is (even in principle) not determined by the concept of nature and its possibility."<sup>3</sup> It is, in part, the function of judgment (or reason in the First Critique) to create this possibility, that is, of a nature where we take it that the evidence for any given singular causal statement -- or, as will be argued later, for almost any singular judgment of physical matter of fact at all -- is the statement of a causal law. A strong nomothetic science is not then entailed by or concomitant with the transcendental principles and the possibility of a nature in general which they establish, although such a science does ideally accompany the transcendental principles plus extra assumptions about the unity of nature.

If this assay of the situation is correct, then Kant's problem concerning the particular qua particular follows naturally. He states his problem in this way: "For although experience forms a system under transcendental laws, which comprise the condition of the possibility of experience in general, there might still occur such an infinite multiplicity of empirical laws and so great a heterogeneity of natural forms in particular experience that the concept of a system in accordance with these empirical laws would necessarily be alien to the understanding, and (there) neither the possibility nor still less the necessity of such a unified whole is

(would be) conceivable (F. Intro. II)." This suggests the problem of particularity in terms of the question of 'unity' and 'system' which we have just seen operative with respect to the question of 'necessity'. The unity of experience 'as a system' under transcendental laws is still an a priori and analytical unity: "These empirical cognitions, through the transcendental laws of nature which they have in common, compose an analytical unity of all experience (ibid.)"; and this means, roughly that the unity of nature entailed by the transcendental laws of the understanding is only the unity of nature with respect to the principles of the understanding, and not a unity of nature established in principle by the understanding. Again, if the transcendental laws of the understanding could be regarded as having already established the unity of nature in principle, we should not need to worry whether or not the unity of nature (as a system under empirical laws) could be discovered: so much would previously have been transcendentially vouchsafed to us, and we should only have to make good in detail this deed of promise. But if this were the case, no auxiliary hypotheses (of apparently transcendental, although subjective, status) would have to be called upon to guide us in our inquiries.

In order to make sense of Kant's insistence that the transcendental principles are inadequate to guide and organize scientific inquiry we must read the transcendental unity of nature weakly enough so that an infinite and not systematically interrelated multi-

plicity of empirical laws is consistent with it; and this would not be the case if the unity of nature had been established in principle in the Critique of Pure Reason. At the end of the "Analogies" Kant touches briefly on the question of the unity of nature:

Our analogies therefore really portray the unity of nature in the connection of all appearances under certain exponents which express nothing save the relation of time (in so far as time comprehends all existence) to the unity of apperception -- such unity being possible only in synthesis according to rules. Taken together, the analogies thus declare that all appearances lie, and must lie, in one nature, because without this a priori unity no unity of experience, and therefore no determination of objects in it, would be possible.  
(A 216 = B 263)

The unity of nature attained in this way is what might be denominated, for want of a better name, the distributive transcendental unity of nature. It corresponds, more or less, to the following crude formula: "This judgment, synthesized in accordance with the necessary rules of the understanding, presupposes a unity of all appearances in one nature; and this judgment likewise; and this judgment likewise; . . .etc." Looked upon in this way, we can understand how the principle that all appearances must lie in one nature is established, without entailing the establishment of the unity of nature in principle. All judgments, to be judgments, must be synthesized by the same rules and possess the same presuppositions; but this distributive unity of nature extends no further than the conglomerate presuppositions of each and every judgment, and therefore not as far as

nature, in detail and in particular, through and through (for us). Like the case of necessity and causality, then, where we must necessarily apply the concept of causality in judgment, and re-apply it to empirical laws, so here there is a unity of appearances in one nature attendant to the application of the categories, but this extends no further than establishing the possibility of the unity of judgment; it says nothing about the 'nature' of the unity of nature, nor how this unity relates to empirical laws (on analogy with the need to re-apply the concept of causality to empirical laws, postulating them as necessary). The systematic unity of nature brought about by the principles of the understanding thus does appear to leave the empirical unity of nature under- or undetermined, and we do need some extra principle to guide us in the construction of the synthetic unity of experience as a system (under empirical laws). Only with such a principle would we be justified in the hope that detailed scientific knowledge in the future could account for the empirical unity of nature.

4. Kant sees in his new principle -- that nature in its particularity must conform to the requirements of our cognitive faculties (judgment or reason) in their need to realize the order of nature as a unitary, hierarchically structured system of empirical laws -- an analogy with the unity of consciousness in judgment. It is worthwhile examining this analogy since it helps to explain why Kant makes the sorts of claims he does for his principle of judgment. Unfortunately, the more

familiar presentation of the principle which appears in the usual, later and shortened "Introduction" to the Critique of Judgment does not very clearly bring out the assumptions lying behind Kant's argument. There he says:

Now the principle sought can only be this: as universal laws of nature have their ground in our understanding, which prescribes them to nature (though only according to the universal concept of it as nature), particular empirical laws must be regarded, in respect of that which is left undetermined in them by these universal laws, according to a unity such as they would have if an understanding (though it be not ours) had supplied them for the benefit of our cognitive faculties, so as to render possible a system of experience according to particular natural laws. (Intro, IV)

The earlier statement of the principle is by far more perspicuous: "(it is a) transcendental presupposition . . . that nature (is) fitted for experience as an empirical system through the affinity of particular laws under more general ones (F. Intro, IV)." Kant's mention of "affinity" here should put us in mind of the first edition "Transcendental Deduction", and the use to which he puts the notion of "affinity" in that context.

It will be remembered that part of Kant's charge against Hume was that the unity of nature could not, for us, be a purely contingent (a posteriori) matter, for without some such unity we could have no experience (knowledge) of the world at all. The unity of nature (in some unspecified sense) is a necessary one from the point of view of our experiences of it. Kant's defense of this position is based upon the reductio argument

that appearances might not, in fact be associable; but if they were not so associable then not only would there not be a world to know, but there would as well be no unitary consciousness (and for there to be any consciousness such that it was self-conscious, it would have to be unitary) that could know it. In such a case one would have numerous sensory perceptions, but none such that either a knowing self or a knowable objective (external) world would be revealed. Kant sums up his argument by saying,

For it is only because I ascribe all perceptions to one consciousness (original apperception) that I can say of all perceptions that I am conscious of them. There must, therefore, be an objective ground (that is, one that can be comprehended a priori, antecedently to all empirical laws of the imagination) upon which rests the possibility, nay, the necessity, of a law that extends to all appearances -- a ground, namely, which constrains us to regard all appearances as data of the senses that must be associable in themselves and subject to universal rules of thoroughgoing connection in their reproduction. This objective ground of all association of appearances I entitle their affinity. (A 122)

Kant concludes by arguing that the principle of the unity of apperception -- that the "I think" must be able to accompany each of our judgments -- thereby entails a necessary, i.e. transcendental, affinity amongst appearances.

This argument reveals some of the force Kant intends his principle of judgment eventually to possess. In the same way in which the transcendental unity of consciousness brings about an affinity amongst appearances, thereby preventing 'our' experience from lapsing into a "buzzing, blooming confusion", so the principle of judgment is

meant to legislate against the possibility of our empirical laws forming nothing but a "crude, chaotic aggregate" (F. Intro, IV), by presupposing that there is an affinity amongst empirical laws such that they are orderable into a single system. Is this analogy strong enough to prompt or allow us to regard the principle of judgment as a transcendental, albeit only subjective, principle? (The principle's subjectivity is only a matter of its inability to provide any new knowledge concerning the nature of objects of knowledge: "Judgment is always relative to the subject and produces no concepts of objects for itself alone (F. Intro, III).")

In order to see whether Kant's analogy is anything more than an analogy it is helpful to rephrase his problem in terms of the context to which it is meant to apply. We may begin by asking: how is the principle of judgment a necessary presupposition for the rationality of science? Framed in this way one can see why the presentation of the principle first introduced (from Intro, IV) is inadequate or misleading, for there is no precise need to presuppose that an understanding (not ours) has imposed upon nature a unity in a shape such that we could comprehend it in terms of a unified system of empirical laws. Kant employs this version of his principle because he both wishes to bring the super-sensible substrate of nature into his argument, and because he believes his argument in fact hinges upon this supposition. If, roughly, we were to come into possession of a systematic set of empirical laws, then,

as with all other species of human knowledge, it would still be left for us to show how this knowledge was possible; and any principle demonstrating the a priori possibility of how -- the universal conditions under which -- certain objects can be known by human consciousness is, a fortiori, a transcendental principle (Intro, V). Altogether, this is not a happy argument, for the 'possibility' at issue here does not relate to the "universal conditions under which alone things can become objects of our cognition generally (ibid.);" at best, if a question were to be raised concerning the possibility of the 'objects' of science, we should need to provide what Kant calls a metaphysical principle, i.e., one which "represents a priori the condition under which alone objects whose concept has to be given empirically, may become further determined a priori (ibid.)." But this is uncalled for in the present context. The problem facing us does not deal with the possibility of objects as such; the fact that the empirical unity of nature as a system of laws is undetermined with respect to the transcendental unity of nature does not entail anything about the objects of scientific inquiry. In this respect there must be a disanalogy between the problem situation facing ordinary knowledge in the First Critique, and that facing science here.

It is simple enough to pinpoint this disanalogy: in Kant's so-called "objectivity argument" in the First Critique emphasis is placed upon the conditions necessary for differentiating between self and world, and these

conditions show how for the possibility of self-consciousness a uniform world-order distinguishable from the order in which the world is experienced is presupposed. There could exist no consciousness at all, it is argued, without our possessing the possibility to connect whatever happens to fall within our experience. The transcendental affinity amongst appearances is articulated through the categories as the necessary conditions (presuppositions) of experience in general. The satisfactoriness of this argument need not detain us here, since the only point I wish to make concerning the transcendental knowledge gained by this argument is that, ideally, it should be able to assuage the doubts of a skeptic who questions the objectivity of empirical judgments -- if we could not make objective judgments we could not distinguish the order of our experiences from the world-order -- as well as one who questions the applicability and objectivity of certain concepts regarded as categorial features of experience -- these, after all, 'articulate' the notion of an objective world-order, the concept of nature in general. On the other hand, we can say, without impugning the necessity of the principle of judgment for science, that the skeptic who doubts the objectivity of scientific knowledge need not feel compelled to dismiss his doubts because of the discovery of this new principle, for the subjectivity of the principle entails that the transcendental 'knowledge' it vouchsafes be apparently relative solely to our own rather special needs; and the answer to these needs is such that the skeptic may well feel not

only that his doubts have not been assuaged, but that they have been justified and even exacerbated. To learn that we must presuppose for the objectivity of science that "nature specifies its universal laws to empirical ones, according to the form of a logical system, for the purposes of judgment (F. Intro, V; emphasis mine)," is not likely to promote confidence in the solidity of our undertaking, indeed, the fact that we require this anthropomorphized and quasi-theological-sounding presupposition to achieve a rational perspective for science puts the rationality of science on a very dubious footing compared, say, with the foundations of ordinary knowledge.

My intention in making this point is to emphasize that the objectivity of science cannot be once and for all secured through philosophical means, if for no other reason than science could fail, through lack of initiative, for example, or nature could, logically and without absurdity, turn out to be recalcitrant towards the 'demands' of reason (judgment). As we shall see, what Kant desires is a situation where if science were successful and it met judgment's demand for system, then the doubts of the skeptic would be regarded as answered, although this process is more complex than indicated here.

It follows from this that although an analogy exists between the manifold of perception and the manifold of empirical laws, the rule we employ to unify the latter cannot be necessary in the same way as the rules of unity for the former, yet both sets of rules are epistemically necessary. Thus, akin to categorial principles other than

those of the transcendental categories proper -- for example, teleology -- the difference between the necessity of the principle of judgment and that of the principles of knowledge in general is a difference of degree: not a degree of necessity, but of the embeddedness, the ineliminability of the principles themselves in our conceptual scheme; so that with respect to knowledge in general, for example, the principle of judgment will be dispensable, but not with respect to science. This disjunction between science and judgment should point up the fallacy of the popular conception that Kant's philosophy provides a foundation for Newtonian theory (in the First Critique): the necessity and so the objectivity of certain categorial concepts is defended in the First Critique, but these categorial assumptions are insufficient not only to provide a foundation for Newton's Laws in any meaningful and restricted sense of "foundation", but the drift of Kant's argument here indicates that they are insufficient as well, if taken apart from any other principles, to supply foundations for physical theory in general. Yet, as is usually agreed, Kant constructed his categories with both eyes on the Newtonian Laws of Motion. This combination of considerations presents us with an area of inquiry usually either ignored or oversimplified in discussions of Kant's theoretical philosophy: because of the analogical and disanalogical relations obtaining between the problematics and principles of judgment (in general) and science, we are forced to discover a way to map the forms of dependency and independency holding

between their respective bodies of knowledge. While the categorial principles do not need the support of science or the principles of science, this does not entail, as will be argued, that either the categorial principles or judgmental knowledge generally is fully intelligible without science. Similarly, although science requires principles of intelligibility of its own, and scientific 'reality' is often thought to be unique and unprejudiced by the demands of common sense (and the assumptions of common-sensical knowledge), it does not follow that the intelligibility of science can be, without loss, wholly removed from the demands of judgment.

5. In Book Five of the Metaphysics, Aristotle, after listing the many senses of "principles", summarized them: "It is common to all principles to be the first point from which a thing either is, or comes to be, or is known; of these, some are immanent in the thing while others are outside (1013a 18-20)." As the core meaning of the Greek term 'arche' indicates, principles are the root and starting point for attaining intelligibility in an area of discourse. How does the principle of judgment promote, in the first place and above all, the intelligibility of science? Is this principle really the principle by which scientific theories attain intelligibility? So that we may be in a better position to understand and evaluate Kant's principle, let us try to fill out a little the bare outline of it presented so far, especially with respect to Kant's conception of a "system of laws", which is to be the result of scientific inquiry, and to the

purposes which he conceives that theory to serve.

Kant envisages his logical system of empirical laws on the model of (or even as) a genus/species classification system: lower order empirical concepts or principles are subsumed under or specified by higher order concepts or principles in the same way in which particulars are grouped into species, classes of species are brought under the appropriate genus, and classes of genera are brought under still higher genera or, ideally, some one highest genus, and conversely from top to bottom (F. Intro, V). As is the case on the traditional model where the genus is the matter of a thing and its specific difference the form, so Kant claims here that "the genus, logically regarded, is as it were the matter or crude substrate which nature works into particular species and subspecies through multiple determinations (ibid.)." The Aristotelian form of Kant's model for a logical system of empirical laws might at first seem inappropriate to adopt for physics, yet when transferred into the physical realm it becomes evident that Kant intends his theory of system to provide a reliable and adequate set of requirements for what he regards as a properly explanatory and descriptive science, which is to say, a science all parts of which have unadulterated and unambiguous cognitive significance for us, a science we can understand, and understand our understanding of it.<sup>4</sup> Thus, for example, Kant informs us that among the various kinds of unity which conform to the concepts of the understanding is that of the causality of a substance; this form of

causality is called "power" (A 648 = B 676). Scientific progress is accomplished by the discovery of some one power which can be seen to underlie various powers appearing at first approximation to have only a family resemblance to one another. This discovery of a new causal mechanism, and thus a new, more general empirical theory creates a necessary unity between the power's diverse manifestations (A 649 = B 677). Kant clearly intends the unity arrived at through the systematic ordering of empirical theories to be in some way imitative of a 'stratification' in the natural world of causal mechanisms and powers, and thus intends us to take literally his seeming analogy that the substrate of nature as its genus is worked into particular forms or species. Explanatory scientific advance thus occurs only with our discovery of more basic entities (powers or forces) of which other entities can, in the light of such discovery, be seen as just manifestations; we advance in physics by reducing the number of kinds of entities which we are forced to admit exist. The empirical pay-off, then, of the unity thesis would be the discovery (e.g.) of some one fundamental power or force which could be seen to underlie all natural processes, a field of force of which macro entities were simply particularizations. "Though logic is not capable of deciding whether one fundamental power exists, the idea of such a power is the problem involved in a systematic representation of the multiplicity of powers (ibid.)." Later I shall have more to say about this argument; here it is used only as illustrative.

In addition to these characteristics, Kant takes it that his notion of system is a general expression of, or includes as determining functions of it, what he calls the "aphorisms of metaphysical wisdom" (Intro, V), namely, the laws of parsimony and of the continuity of nature (or natural forms), and the maxim that principles must not be unnecessarily multiplied, or in brief, the greatest possible combination of unity with diversity. These are the rules, then, by which we construct a system of empirical laws, and in accordance with which, as articulating the ideal of a system, we investigate nature. Although each of the laws of system can be found in "fashionable formulas" -- "Nature takes the shortest path," "She makes no leaps in the manifold of forms," "She is rich in varieties but poor in species" -- they are plainly meant by Kant to correspond to the laws regulating species/genus systems generally. Thus the logical law of genera (Identity) demands that we attempt to unify lower order principles or concepts under higher ones, thereby providing for and securing the unity of the system as a whole; the law of species (Diversity) compels us to search for diversity, species and subspecies, in order to secure the completeness of the system ("For since the species is always a concept, containing only what is common to different things, it is not completely determined. It cannot, therefore, be directly related to an individual, and other concepts, that is, subspecies, must always be contained under it." A 656 = B 684); finally, the law of continuity prescribes that we proceed

from each species to every other by gradual increases in degrees of diversity (cf., A 652-8 = B 680-6). The principle of continuity arises from the union of the first two laws, since systematic unity can only be reached by ascending to higher genera and descending to lower species. Kant does not claim completeness or exclusiveness for these principles, and would, for example, support variations like the injunction against ad hocness in physical theory. What is important to note is that, whether these are the correct principles for a system of physical laws or not (they clearly approximate modern simplicity criteria), Kant denies that these principles, like his principle of judgment itself, are either empirical (derivable from experience) or simply psychological: "Under no circumstances can a principle like this be posted to the account of experience, because only under this assumption is it possible to order experience as a system (F. Intro, IV)."

The growth of systematic coherence amongst empirical theories ideally parallels and serves to measure the growth of our comprehension of the structure of the physical universe since a parallel is hypothesized between the logical structure of our system and the physical structure of the world. The ideal of a logical system thereby becomes a representation and anticipation of a perfectly explanatory science. The emphasis must here lie on 'explanatory', for as Kant conceives the situation, without this anticipatory model in hand the possession of an empirical law or of a manifold of such laws would be without specifiable significance: we would not know

exactly what we could make of it, just as without recognition of the concept of an object in general the status of percepts which go to make up a judgment would remain ambiguous (and open, therefore, to skeptical challenge). A 'representation', in the wide generic sense of the term, is either a component of or the result of a rule-guided activity; representations (percepts, or on a higher level of representation, empirical laws) without correlations set by some class of rules are empty, for they do not and cannot carry their significance, their intelligibility, or their meaning on their face. At each level of representation individual members gain their significance by being united through normative rules into some greater totality: wholes, in the context of intelligibility, are prior to their parts. Thus even so brief a sketch of what Kant intends by his theory of system reveals it to be part of the more general rejection of simple logical compatibility or the law of non-contradiction (and hence of empirical truth and falsity) as adequate to the problems confronting our view of the objectivity of empirical knowledge<sup>5</sup>; for logical compatibility is not enough to secure the real compatibility of a manifold of theories, that is, of these theories all expressing aspects of the same one world. Thus part of Kant's justification for calling his principle of judgment transcendental stems from the relation in which it stands to pure logic, mirroring the shift from pure or formal logic to transcendental logic in the First Critique. Systematic unity, interpreted as an

expression of the stratification of nature's powers, can accomplish the task of providing a stronger criterion of compatibility than formal logical compatibility if we are stringent about the interpretation of the unity of different theories claiming that different powers are all only manifestations of a more basic power.

Looking at the problem of objectivity of science in terms of a search for the criterion for real compatibility, where logical compatibility can be seen to be inadequate, suggests that the introduction of the requirement of systematic unity is made on analogy with the move from a correspondence to a coherence criterion of truth by way of the reproductive imagination in the "Subjective Deduction" of the First Critique. We cannot, one by one, compare each of our empirical laws with reality to see whether they are true, for we begin by premising already having done that: we possess a multiplicity of equally well-confirmed empirical theories; what makes them anything more than a crude, chaotic aggregate? Just as the categories as functions of a judgment express the concept of an object in general, supplying us with a formula for comparing and binding several representations into the unity of a judgment, so here the theory of system supplies a 'concept' of an empirical law in general, giving us a rule for bringing the manifold of laws to the unity of a logical system. Hence, to say that an empirical law ranges over a certain part of the natural world is to claim that it is one of a number of empirical laws having a definite place in a single system,

ordering on a hierarchial basis all those laws. Kant intends, then, that this rule serve as a criterion of truth and falsity, a rule which obviously goes beyond 'empirical' truth and falsity. He says, for example, "The law of reason which requires us to seek for this unity, is a necessary law, since without it we should have no reason at all, and without reason no coherent employment of the understanding, and in the absence of this no sufficient criterion of empirical truth. In order, therefore, to secure an empirical criterion we have no option save to presuppose the systematic unity of nature as objectively valid and necessary (A 651 = B 679)." That systematic unity provide some criterion of truth, or better, a necessary criterion of truth, is not the same as that it provide a necessary and sufficient criterion of truth; nor should Kant be interpreted as here asserting that systematic unity provides this stronger criterion, for all he means by "sufficient criterion" is a workable and pragmatically advantageous one, sufficient for reason to allow the understanding's employment to be coherent (in its dealing with physical theories). Again, Kant should not be thought to deny or wish to deny that what we desire are theories which are 'true to the facts', which correspond to what is the case; on the contrary, he is arguing that only a coherence criterion of truth in the form of the demand that we be able to construct a logically unified system of theories is an adequate and sufficient guide in our search for verisimilitude: "For were we not entitled

to assume this (that nature itself is stratified in such a way that it can be cognized as a system of laws -- JB), and were not to base our treatment of empirical representation on this principle all reflection would be carried on at random and blindly, and as a result with no sound expectation of its agreement with nature (F. Intro, V)."

Again it must be noted that Kant nowhere denies correspondence as a theory of truth and nowhere affirms coherence as a theory of truth (in the manner of the later idealists). However, the intelligibility of judgments or theories expressing what is the case cannot be isolated from the conditions under which their truthfulness can be evaluated. In recent times this fact has received renewed vitality from considerations relating to the comparability of rival scientific theories. Briefly, the argument for the incommensurability of theories proceeds like this: If the axioms of a theory determine the meaning of every term in the theory, then ipso facto they determine the meaning of every sentence in the theory. Now if two theories, T and T', have different axioms, then for every non-tautological sentence S in T, there is no sentence S' in T' such that either S and S', or S and not-S' are equal in meaning. From this it follows that two theories T and T' will be commensurable (and so their relative truth-fullness comparable) if and only if there is a non-tautological sentence S in T and a sentence S' in T' such that either S and S', or S and not-S' are equal in meaning. There-

fore we can conclude that if two theories T and T' have different axioms, then they are incommensurable, or so the story goes. While the picture of theory-meaning employed here is too simple and probably false, it does make plain the point that there is no reason to expect that the empirical consequences of T and T', represented by S and S', will be comparable, which is to say, there is no reason to expect that we shall be able to come up with a neutral observation language for the two theories in question. 'Truth', then, often can be said to have only intra-theoretic significance in science. From here we can build a simple analogy with Kant's problem situation: just as a scientist persuaded by T cannot appreciate the claims of scientists committed to T' unless he makes the gestalt-switch from T to T', so a skeptic cannot appreciate the claims being made for a large body of theory until he makes the gestalt-switch from the perspective of judgment (ordinary knowledge) to that of system, that is, until he considers that body of knowledge from the perspective of the conditions of intelligibility for those theories as a whole, which is the same as the conditions for the truth of those theories (objectively, and in general) as set forth by the theory of system. Thus even though the 'ideal' of truth may be one of pure correspondence, such an ideal, by the very nature of the case, must be cognitively indeterminate. For cognitive purposes a truth is always a truth with respect to some theory or categorial framework or first or leading principles, and in science this

first principle for empirical theories, if it is not to be empty, must itself make theoretical commitments: it must anticipate nature structurally, and correlate that structure with its own formal structure. It is because of this that reason cannot here beg, but must command; and whatever reason does command, the "with respect to" of whatever framework we are employing will always involve us in employing an intra-framework, coherence criterion of truth or success. Thus, in practice, coherence and correspondence will function together to make up an overall procedural as opposed to propositional framework: the ideal of coherence will be a measure of and for correspondence; we will construct and evaluate our theories with respect to and with an eye on our ideal framework; pragmatic success of tests and experiments will provide not only a source for thinking our theories do correspond to reality (and have an empirical pay-off), but it will as well be the way in which feedback from nature prohibits unjudicious unification of theories into the system. If this is correct, then perhaps there will be a way to choose and evaluate  $T$  and  $T'$ , if not with respect to each other then with respect to the ideal framework; and the stronger and more detailed that ideal framework, the easier, more efficient and more rational will be our choice, or so I shall contend. This still leaves unanswered how we come about to assert and employ just 'this' ideal framework above all others as well as how it becomes refined, and therefore why the skeptic should accept, or be tempted to accept, any

of this proposal; but these questions require more technical answers than we can as yet provide.

6. Although it will not form part of my argument and defense of Kant, there is an interesting theory in this context which is worth a few moments' digression. Kant regards the result of any success in the ordering of empirical theories into a system, in the discovery of more general and powerful theories, as the source of an appreciable feeling of pleasure. Pleasure arises from the feeling of purposiveness accompanying any discovered harmony between the order of nature and the demands for system of our cognitive faculties. The harmony in question gives pleasure, according to Kant, just because it is contingent, unexpected and unnecessary from the perspective of human understanding (Intro, VI). Moreover, the pleasure bestowed upon us from the discovery of unity amongst heterogeneity fortifies and vitalizes us in our inquiries, motivating us to search for still greater unity, simplicity and elegance within the manifold of nature's produce. "As against this a representation of nature would be altogether displeasing to us, were we forewarned by it that, on the least investigation carried beyond the commonest experience, we should come in contact with such a heterogeneity of its laws as would make the union of its particular laws under universal empirical laws impossible for our understanding (ibid.)." If we can assume that the constitution and structure of all men's cognitive faculties are essentially similar, apart, say, from the various sorts of contamina-

tion to which all socialized individuals are susceptible, e.g., from the desire to produce a properly "Soviet Science", or, more commonly, from the desire to achieve a mastery of nature for the sake of technological progress, then instances of feelings of 'scientific pleasure' can be assumed to be universally valid. This sort of assumption is necessary if Kant's argument is not to be circular; otherwise the claim that the discovery of systematic unity is accompanied by pleasure would become tautologous. Nor, on the other hand, need Kant deny that standards of taste in scientific aesthetics vary from era to era; only that whatever the standard may be at a particular time it must, as it were, be logical and not pathological. Of course since this argument is contingent upon our discovering that all men's aesthetic faculties are alike, or, more usefully, inductively discovering that great scientific theories and advances have in part been motivated by and the source of pleasure taken in the harmony of nature and mind, it cannot be unconditionally accepted or finally proved. However, on the basis of it we are entitled to claim that aesthetic considerations cannot be a priori discounted as irrelevant to the aims of science, and there is no reason not to believe that the desire to construct a beautiful science may well have to be a necessary ingredient in any satisfactory account of the rationality of science.

7. Having taken this cursory look at Kant's theory of system, we can now state with more precision than before the nature and meaning of his principle of judgment:

firstly, it is a principle not about what there is in nature, but about how we ought to judge nature (Intro, V); secondly, it is a principle which regulates not the content of scientific theories as such, but the activity of scientific theorizing; thirdly, it is a principle for the progression of science (ibid., and F. Intro, II); fourthly, its interest is not solely in the evaluation of science at the present, but also in the general aims and goals of physics (Intro, V); finally, as a theory it informs us not only about what constitutes the rationality of science and scientific activity, but as well about the rationality of the pleasure men might and do take in science, that is, it informs us about the beauty of science. Kant's emphasis is on what we must do and look for if we wish to have a rational science: "In precisely the same way experience as well must ideally form a system of potential empirical knowledge according to universal as well as particular laws, insofar as this is objectively possible, at least in principle (F. Intro, IV)." This forms the "necessary aim" of science; it cannot be derived from experience, nor is it just a psychological feature of the way we tend to think about experience.

Not surprisingly, Kant's deduction of the principle of finality (the principle of judgment) amounts to no more than the statement that this principle must be presupposed in order for us to attain objective knowledge of nature. Thus Kant speaks of his principle as a guiding-thread (Leitfaden) for our investigations into

nature. In one of his formulations of this deduction he says: "For were it not for this presupposition (that nature is suited to our cognitive faculties, etc.), we should have no order of nature in accordance with empirical laws, and consequently, no guiding-thread for an experience that has to be brought to bear upon these in all their variety, or for an investigation of them (Intro, V)." To reiterate: Kant is here discussing what he calls the "heautonomy" of judgment, that is, whatever principles judgment has or uses, these principles are for judgment's use alone, and are not constitutive of experience. If the present principle were treated as constitutive, then Kant would be making the transcendent claim that nature is suited to our cognitive faculties and it would therefore be only a question of time until all the appropriate laws were discovered and brought to the unity of a logical system. No such claim can be ascribed to Kant on the basis of the evidence examined thus far. His claim is only that if science is to be a rational activity, then we must presuppose the principle of judgment, for without it we should lack an adequate epistemological ground for theorizing, and so a criterion for adjudicating between or amongst particular specimens of physical theory. I think that this claim can be defended; if it can, then my suggestion that Kant's philosophy of science is rationalist, a suggestion entailing the wholesale rejection of empiricism, will have been made good. In order to accomplish this end I shall dispute antagonists of Kant who argue that there is only

one plausible theory of presupposing relevant to Kant's theory, and that this particular view of presupposing does not fit Kant's model; therefore we cannot be committed to adopting his principle of judgment, but only to its non-rejection.<sup>6</sup>

The theory of presupposing imputed to be the only such theory relevant to Kant's principle of judgment says that the relation between an activity X and a proposition P, where X presupposes P, is that one cannot sensibly, i.e. without absurdity or utter lack of intelligibility, perform X while antecedently to or concurrently with the performance of X denying that P.<sup>7</sup> For example, one cannot without an utter lack of intelligibility head off to the store for food knowing that the store is closed, although one could, of course, intelligibly go to the store to see if it were closed. Intelligibility demands here not a commitment to the truth of the presupposed proposition, but only an agnosticism concerning it, with the obvious provisos that one can think it to be true and found wrong, or think it to be false but not claim to know it to be false. If this theory were to be placed into the context of Kant's principle, the following would result: the systematization of empirical laws of nature is the activity X, and the proposition "These empirical laws are capable of being put into a logically unified system" is the presupposition P. Evidently, one could go about X without even having considered the truth or falsity of P; moreover, believing that P would not alter or make any difference to X; and, on this model, there

is no way in which the belief that P could serve as a positive assistance in the accomplishment of X in any non-psychological sense. Even psychologically the belief that P would not make any difference to X itself, but only to the agent's attitude towards X. Hence, if one were to be conscious of P at all in any considered fashion the only legitimate demand would seem to be that it not be explicitly rejected. Again, one could be skeptical about P and still get on with X without an affront to rationality. Interestingly, although plainly this is not the sort of thing Kant has in mind at all in his discussion of system, if read in this way Kant's principle is analogous to an attempted solution to the problem of induction.<sup>8</sup> This runs: nature either does or does not conform to discoverable inductive generalizations; if it does not, then our practice of making empirical generalizations is useless and irrational; if nature does conform to this practice, then science might be successful. Since we cannot without absurdity assume nature does not conform to scientific practice, then we must assume it does; induction is therefore a rational procedure. Read in this way, then, Kant's principle might be looked upon as a solution to the problem of induction. At any rate, both Kant's principle, read in this manner, and this defense of induction fall afoul of the aforementioned criticism: we do not need to hold as true the proposition that nature conforms to our cognitive faculties, that the body of empirical laws be systematizable, or that nature conforms to our inductive

practices to carry on scientific activities rationally; we only need not to reject these propositions as being possibly true.

The claim that all that is required for the rationality of scientific activity is the non-rejection of P is incompatible with the claims which Kant wishes to make for the principle of judgment. I do not believe it is the case that Kant has overstated what he regards as the intrinsic necessity of this principle for the rationality of science, but rather that the suggested theory of presupposing itself presupposes the orthodox empiricist view that the aim of science is to accept and reject theories solely in accordance with empirical success or failure, and that therefore it must be a contingent matter for the rationality of science as to whether or not its empirical laws can be put into logically unified system. On the Kantian view science is an essentially teleological, aim-oriented activity, while on the above account it plainly is not, for it tacitly separates the 'truth' of our empirical laws from the question of whether or not they can fit into an empirical system of laws, and we have already seen Kant wishes to argue that the only criterion we have for the truth of our laws, or rather, the only sufficient criterion we have is their systematizability. If this is correct, then it is fair to attribute to the suggested theory of presupposing the claim that we can only reject theories, or interpretations of theories on empirical grounds, and not on purely or solely rational bases in accordance with some ideal of explanatory truth;

but if this is right, then this theory of presupposing is certainly not Kant's, and crucially, it begs the decisive question at issue. The question to be asked is not whether we can go about scientific activity without presupposing P, but whether our activity can be rational without having a complete and unified system of laws as our aim or goal, and therefore without the hope of achieving that goal. If science is goal oriented in the way in which Kant thinks it must be, then systematic unity and its attendant maxims form truth criteria which allow for rational criticism; if not, then all theories and their interpretations stand on equal footing and must either fit the facts or be dismissed. But theories and different interpretations of theories do not all stand on the same footing, and we are entitled to make rational criticisms, to prefer one of two putatively empirically equivalent theories on ideals of explanatory truth.<sup>9</sup>

For example, the triumph of the Copernican theory resulted from the fact that the Copernicans held their theory to be 'truer', to have greater verisimilitude than the Ptolemaic theory; and indeed they had to base their preference on a rational ground, on a metaphysical ideal, for there was no other ground of preference to be had: "When Copernicus had finished adding circles, his cumbersome sun-centered system gave results as accurate as Ptolemy's but it did not solve the problem of the planets."<sup>10</sup> The Copernicans' determination to follow through and maintain the new theory cannot be accounted rational unless we grant that there are good 'supra-

'empirical' (from the perspective of orthodox empiricist theory) reasons for carrying on one line of inquiry as opposed to another. Generally, then, how can we assess rival scientific theories which possess equivalent instances of empirical success (having met all the same tests and experiments)? To argue that we cannot is question-begging, since Kant has proposed a theory capable of eliminating at least some candidates: in an advanced state of science not every new corroborated theory will find a place for itself in the existing system.

This result receives substantiation through the following simple consideration. In the search for truth on the observational level it is necessary that we begin with a commitment, however tentative, to some theory, for without some such guide we have no way whatsoever of choosing amongst instances, of evaluating disparate pieces of evidence, and generally, of knowing where to look. We are guided in gathering inductive evidence by an interest we have in some range of phenomena, and thus in a theory we have about the way that range of phenomena hangs together as a group. If this is the case on the observational level, then we should expect that on the theoretical level as well we would need an aim or a goal which would be able to delimit at least the kinds of theories which ought to be sought after, and this function could only be filled by a theory which was not itself 'empirical'. These aims and goals therefore would have to be metaphysical ideals, expressing what we wish for

our science and what we hope to find in experience. Putting the matter in these terms does not add anything to Kant's theory, for it simply makes the same point as Kant's in the context of a straightforward criticism of empiricist presuppositions about the rationality of science. It has long since become fashionable to admit that metaphysical conjectures do have a place in the context of theory construction; scientists bring all sorts of metaphysical fancies to their work -- Newton and Freud were apparently both numerologists. What is not usually admitted is that metaphysical ideals can play a role in the justification of physical theories -- which is not to say that throughout the history of physics ideals of natural order have not de facto done just that: consider again the triumph of the Copernicans. Nor should the fact that ideals of natural order have played a de facto justificatory role in the progress of science lead us to adopt an instrumentalist interpretation of scientific theory, as is usually done; I shall momentarily suggest and attempt to support later that the Kantian ideal is the ideal of a realistic science. The usual criticism against metaphysical ideals is that they are too conservative, that if taken seriously they would tend to inhibit scientific spontaneity and creativity. I find this criticism rather hollow-sounding and vaguely nostalgic, importing into scientific activity an aura of romantic Schwärmerei. My detailed defense of scientific rationalism will be made as I proceed; for the present I should say that if anything Kant's ideal

of a rational science is itself too vague, too contentless to be very interesting and to invite interesting criticism.

8. The predictable criticisms of Kant's proposal falter through an inability to appreciate the full implications and significance of the theory which he is attempting to put forward; they begin by assuming, probably unawares, the truth of the very theory Kant is attempting to criticize. This is not unlike what happens in political theory, where purported 'radical' critiques of liberalism fail because they tacitly accept the premises of liberal theory, namely, the priority of negative freedoms, freedoms 'from', over positive theories of freedom. There is something more than analogy at work here, for Kant's contentions concerning the 'ought' or normative status of his principle of judgment are inseparable from the positive view of freedom contained in his moral philosophy. A discussion of the undercurrents attaching moral and political ideologies to the prevailing 'scientific' ideologies will have to wait for another time. Before going on to discuss the formal status of Kant's principle of judgment, however, we must first clear up a significant bit of Kant's argument which has so far been left in an ambiguous state: that is, his preferred formulation of the principle of the finality of nature.

It was not wholly fortuitous that we chose as an historical example above the case of the Copernicans (Galileo) versus the Aristotelians (the Church) to

instance a scientific dispute where rational criticism and metaphysical preference could be seen to play a decisive role. The issues surrounding this controversy were not, however, exactly what we portrayed them to be. As that historical fragment is currently evaluated, the area of contention which divided the two camps concerned was whether scientific theories were to receive a realistic or an instrumentalist interpretation. In his defense of the Church's position, Bellarmino argued that the new theory could not even hope to provide proof of its contention that the sun was in the center of the universe, the earth in the third heaven, and that the earth revolved around the sun (thus contradicting scripture), for a theory exhausts itself in the giving of predictions. So we find Bellarmino writing: ". . . Galileo will act prudently if he will speak hypothetically, ex suppositione and not absolutely, as Copernicus has always done . . . to say that we give a better account of the appearances by supposing the earth to be moving, and the sun at rest, than we could if we use eccentrics and epicycles, is to speak properly; there is no danger in that, and it is all a mathematician requires."<sup>11</sup>

Bellarmino's defense of instrumentalism, like Berkeley's, is an attempt to deny science the opportunity to be in a position to make claims about the true nature of things, how things 'really' stand in the universe; in Cardinal Bellarmino's case this was done in the name of a defense of scripture and Biblical ontology, in Berkeley's, perhaps, in the name of his own curious view of common

sense, and certainly in the name of his ontology, which 'protects' his theology from science (or vice-versa?). Both views stand in sharp contrast to Kant's attitude towards science, his apparent belief that science afforded us the best sort of knowledge about the physical universe that we are able to possess -- leaving aside, for the moment, his desire to limit the claims of knowledge in order to make room for belief. Kant's hope for science, that we discover the universe to be suited to our cognitive faculties, directly opposes Bellarmino's kind of thinking that mathematicians (scientists) would do well and wisely to speak ex suppositione.

If Kant stands opposed to Bellarmino (and Berkeley) on the question of the proper interpretation of scientific theories, then it is likely that his theory of science is implicitly realistic. It is this tentative overlap between Kant's theory of system and scientific realism which I wish to begin exploring here. In the First Critique Kant manages to preserve a 'realistic' view of ordinary experience -- what he calls "empirical realism" -- by reducing, if you will, or making an equivalence between ordinary cognitive experience and that which fits our categorial scheme. Nothing can enter our purview which is not presupposed as being in categorial form; since it is presupposed that nothing can be experienced which does not fit the categorial demands, then the 'world' of our experience and the 'world' as such (although not the world 'in itself') are co-extensive. Crudely, it is this co-extensivity between the world as

we must experience it and (for us) the world as such, which is to say, the fact that we cannot separate these two worlds from one another and maintain equivalent cognitive significance for them both, which is at the center of Kant's transcendental idealism. In this way Kant salvages the appeal of naive realism, namely, the sense we have that in judgment we come to possess a knowledge of the world just as it exists in and for itself, and yet he avoids the epistemological embarrassments (naivete) of that position; our visceral prejudice becomes sanctified through transcendental necessity. While this manoeuvre solves philosophical problems once, it cannot, as Kant realizes, do so twice: the form of the world of ordinary experience can be systematically relativized to our modes (both cognitive and sensible) of experiencing it, thereby having its form transcendently legislated, but this same process cannot be repeated without ambiguity with respect to the sort of detailed knowledge of the world we gain through scientific inquiry. However, if we cannot legislate that experience conform through and through to the requirements of our thinking faculties, we can hope, or at least presuppose for the sake of the rationality of scientific activity, that someone or something else has; and this seems to me very roughly just what Kant is suggesting in formulating his principle of finality in anthropomorphic, and by extension, quasi-theological terms, e.g., "nature specifies itself . . ."; "as if an understanding"; "which nature works into particular species. . ."; etc. For whatever reasons, Kant

is unwilling to consider or incapable of considering an order of experience which can or might be rationally apprehended unless that order is regarded as either the result of an explicit ordering activity (formally, the spontaneous work of our understanding and imagination with respect to ordinary experience), or, at least, as if it were the result of a rational (intentional) activity. While I do not wish to claim that Kant explicitly identified knowing with making, the paradigm of knowing through making is never far from his mind: "For we have complete insight only into what we can make and accomplish according to our conceptions (C.J., 68)." Thus if judgment works "artistically" in the ordering of empirical laws into a logically unified system, it must presuppose that the inner ground of nature has worked itself up into a form whereby it can be so apprehended (F., Intro, V); hence the theory of system as a principle of finality or purposiveness, and likewise the references to the supersensible substrate of nature in the "Critique of Teleological Judgment". Kant's embrace of empirical realism here is thus achieved at the expense of an even possible acceptance of a form of realism unconnected in principle with some idealistic qualification.

It was previously noted how in his discussion of both moral experience and living things Kant's commitment to transcendental idealism, to an idealism irredeemably constitutive of experience, stood in the way of his analysis of those realms of experience being independently acceptable: the structure of his detailed analyses of

those realms of experience and the structure of his transcendental idealism were incompatible with one another, and there seemed moderately compelling reasons for accepting the former over the latter. In arguing against this form of idealism I have not meant to deny that the Kantian categories are necessary for the possibility of experience, and that therefore some weaker, theoretically non-eliminable form of idealism might not be the result; I think this is likely to be the case. Later, I will 'factor out' the simpliciter constitutivity of the transcendental categories by arguing that a contingent fact about this categorial framework as opposed to all others is its necessity for the possibility of experience in general. This contingently special place the causal categorial framework has for us derives from its being the simplest or lowest level framework, combined with the fact that our sensibility, which brings us into 'contact' with the external world, is one which must be at least causally affected; it is thus that the categories in that framework represent the minimal necessary requirements for experience, without that entailing their being co-extensive with the categories necessary for any possible experience to the exclusion of all others, and, therefore, with the constituting elements of other possible frameworks not being categories in the proper sense. To argue the reverse would be to assume that only the constituting elements of the categorial framework co-extensive with the minimal conditions for the possibility of experience are truly

categories. It may be only a posteriori the case that other categories are only necessary for some finely delimited range of experience (domain of objects), as was true of teleology; but why make a difference in degree, which is really only a difference in extension, a difference in kind?

Leaving these considerations aside until they can be dealt with more fully, I think I am nonetheless in a fair position to level a rather obvious criticism at Kant's formulation of the principle of the finality of nature for our cognitive faculties, and to draw from that an equally obvious conclusion. The anthropomorphic and quasi-teleological references in Kant's presentation of this theory are simply redundant; the cognitive significance of the necessary presupposition for the rationality of science that nature be "fitted for an empirical experience through the affinity of particular laws under more general ones (F. Intro, IV)" is neither supplemented or clarified nor made the slightest bit more intelligible or plausible by the extra assumption that some one or something so fitted it. Also, it would seem that if any cognitive significance were gained by making this extra assumption, which Kant should deny although in fact he remains ambivalent (F. Intro, V), then he would be in the difficult position of having to admit that if we did discover the desired harmony, then this discovery would supply evidence having cognitive import for physico-theology (e.g., say, an argument from design for God's existence), and that would be trespassing beyond the

bounds of reason. If this extra assumption does not and cannot legitimately have cognitive significance, then why have it there at all? Architectonic considerations might make such a move suggestive, and moral and theological motivations might make it (for some) desirable; but is this enough to justify its presence?

Freed of the obfuscations which Kant's theological usages promote, his articulation of this theory of system can be recognized for what it is, that is, an articulation of what a realistic physical theory would look like in formal terms. What goes along with this, then, is the claim that only the pursuance of a realistic science can be fully rational. This does assume that Kant's conception of nature as suited to our cognitive faculties in the form of a hierarchial species/genus system is the same as, or at least a partial articulation in formal terms of what "realism" amounts to in scientific theorizing, and thus that Kant's notion of system can function as a partial criterion by which we may judge whether or not certain theories are realistic. Why else would Kant have employed a classification system in this context? Minimally, in order to avoid this conclusion one would have to deny that the employment of classificatory terms and thus a system of classification presupposes realism i.e., the existence of natural kinds of one sort or another (the nature of which, in physics, will be spelled out in detail later). The reason for this is that the only way to break the connection between realism of a moderate sort and natural kind terms (including species

and genus terms), and thus the connection between realism and genera systems is to assert that objects or various kinds of natural processes have nothing more in common than the concepts by which we classify them or the laws by which we explain them. It certainly seems as if Kant wished to affirm the opposite; and part of his reason for referring to the supersensible substrate of nature doubtless derived from his sense of unease about this conclusion; thus, "reflective judgment is such that it cannot undertake to classify the whole of nature by its empirical differentiations unless it assumes that nature itself specifies its transcendental laws by some principle (ibid.)." This is only to say that the attempt to classify nature presupposes the existence of natural kinds, and that for science the principles of the differentiation of nature into kinds must be accessible. This is no argument for the existence of natural kinds, but it does indicate the realistic direction of Kant's theory, and I think that Kant is right in maintaining that the use of natural kind terms presupposes the existence of natural kinds, apart from the question of whether or not they actually exist. In a short but helpful presentation, Quinton has argued similarly.

'There are natural classes', (O), is then part of the meaning of 'there are natural classes of which we are aware' (P). And P is part of the meaning of 'there are natural classes of which we are aware, whose membership we can pick out with the use of re-applicable words', (L). P, then, means O and we are aware of them: L means P and that we have names for them. So the use of classificatory words is not just the same thing as the existence of natural classes, it does really presuppose it.<sup>12</sup>

To say that classificatory terms and laws (ranging over natural processes) really do presuppose the existence of natural kinds does not entail the existence of natural kinds; but, as already indicated, I intend to take it that this distance between what we must necessarily presuppose and what exists can be covered only through scientific discovery and progress, not philosophy.

## B. The Unconditioned

9. As part of my critical evaluation of Kant's philosophy of science in this section, I will argue that: (i) science must presuppose the existence of things in themselves for its possibility, and has knowledge of things in themselves as its goal; (ii) the theory of system sketched in the previous section cannot fulfill all the functions Kant assigns it; (iii) Kant has an ontology which is presupposed by his epistemology generally, and by the theory of transcendental idealism in particular; and (iv) the 'problem' of empirical knowledge in Critical theory can only be understood against the background of this (pre-Critical) ontology.

In my account of the way in which scientific activity presupposes the existence of things in themselves I will follow Krausser (1972). Let us begin with an 'itemized' overview of Kant's methodology of the sciences, since this will lead us directly into our central area of concern.

a. we begin with a conscious awareness of the a priori forms of knowledge and nature respectively, plus the general aims of science;

b. we possess a number of empirical theories which

have been framed in accordance with these principles, and ordered, more or less, into a unified system;

c. a novel hypothesis is conjectured concerning either a mathematical relation of bodies to one another, or a generative structure which explains some observable state of affairs;

d. possible consequences of the proposed theory are deduced;

e. and experiments are then framed in order to test for these consequences;

f. the experiment is made: here and here only does our theory come into direct contact with nature;

g. we receive the results of the experiment in terms of perceptual reports about certain states of affairs, which we then

h. process, in relation to our theory, by modus ponens or modus tollens;

i. which in turn leads to either new questions and problems about our theory, or puts us in a position to further expand and elaborate the original hypothesis.

j. Well corroborated theories are checked against those already systematized as a check on step h; this too can lead to problems and be a motivation for making novel hypotheses.

That this is a controlled learning system is made evident by the place that nature has in it, providing an independent input not derivable directly from reason, though reason places limits, by way of its anticipatory principles, upon what is acceptable from nature and how

that information is to be interpreted.<sup>13</sup> As Kant puts it: "...that while reason must seek in nature, not fictitiously ascribe to it, whatever not being knowable through reason's own resources has to be learnt, if learnt at all, only from nature, it must adopt as its guide, in so seeking, that which it has put into nature (B xiv)." Here a tension in Kant's theory comes to the fore. Nature teaches us by providing corroboration or falsification for hypotheses in experimental test situations, but if this is the only place or contact between nature and science then nothing could be learnt from nature unless nature as such and not simply nature in general or categorial nature was postulated as <sup>an</sup> independently existing and autonomously structured object. Nature for Kant is always categorial nature: a system of objects of possible experience constituted by the laws of the understanding and the hypothetical laws of empirical advance. In all this nature is a class of determinate or theoretically determinable objects, and thus a product of the activities of the understanding and reason. If this is all there was to nature we could not learn from it or be taught by it; but since nature is a cognitively constituted totality there is no reason to think of it as a static 'this': the referent of 'nature' is a dynamically constituted whole. Therefore, if it is to be possible for nature to teach us anything we must postulate a continuous 'leak', so to speak, whereby nature in itself-- things in themselves -- provide a continuous source of 'constitutible' information which

can become a part of empirical nature. "Unless, therefore, we are to move constantly in a circle, the world of appearance must be recognized as already indicating a relation to something the representation of which is, indeed, sensible, but which, even apart from the constitution of our sensibility... must be something in itself, that is, an object independent of sensibility (A 252)." Unless this were the case nature could not thwart our anticipations or throw up new and interesting 'facts' which could lead us to hypothesize new and more comprehensive connections amongst appearances.

The progress of science evidences that the constant circle of appearances is not a vicious one and justifies the postulation of things in themselves as the 'source' of appearances, as opposed to, for example, the auto-affectations of the 'soul' as their source. But more than this is required to make scientific progress comprehensible: if the empirical association of representations in the reproductive imagination presupposes the associability of appearances (A 100-1), then things in themselves must be postulated (thought) as having a law-like structure of their own, and our empirical laws as representing simply a perspectival, sensible and discursive way of grasping and articulating that structure.

For just as appearances do not exist in themselves but only relatively to the subject in which, so far as it has senses, they inhere, so the laws do not exist in the appearances but only relatively to this same being so far as it has an understanding. Things in themselves would necessarily, apart from any understanding that knows them, conform to laws of their own. But appearances are

only representations of things which are unknown as regards what they may be in themselves. As mere representations, they are subject to no law of connection save that which the connecting faculty prescribes. (B 164; emphasis mine)

Kant must be explicitly proposing both the epistemological and ontological interpretations of things in themselves here, for only on such an interpretation can we regard his contrast between our empirical laws and the law-like structure of things in themselves as not impugning the objectivity of our empirical theories. Thus, as I read him, Kant is saying: Nature in itself, apart from any peculiar understanding, must conform to some kind or form of law-like regulation of its own; for our purposes, however, this form of law-like connection is irrelevant because we can only understand the law-like structure obtaining between things in so far as they conform to the kind of connections prescribed by our understanding. That is the point of Kant's contrast; but we were looking for something stronger, namely: we could not presuppose the associability of appearances unless we postulated a law-like structure as obtaining amongst things in themselves. This follows from our first considerations: if nature's input into the learning situation were random, amorphous or, in general, unstructured then progress would either be impossible or, assuming some form of progress did occur, rationally incomprehensible. The progressive ordering and 'growth' of 'nature' is only conceivable if we postulate as the source of appearances an already ordered and structured reality. But such a line of argument must have been in Kant's mind in the above quote;

otherwise, why should he have said that things in themselves 'necessarily', and not 'might' or 'conceivably may be', conform to laws of their own? Thus if we must postulate the existence of things in themselves to account for fresh information -- to allow nature its pedagogic function -- we must likewise postulate that things in themselves conform to laws of their own; if this postulation was not made we would have no reason to expect that we could either break through the constant circle of appearances to gain new knowledge, or that the knowledge we did gain was anything more than a subjective fiction. What the wholly epistemological reading of things in themselves forgets, paradoxically perhaps, is the degree to which nature is a product and a result of our ordering activities and not a simple 'given'. The world is all that is the case; and what is the case is what we judge to be the case or what is in principle determined by the laws of empirical advance. But if such a world is to remain open then it requires a source outside itself to provide constitutable information; and such a source cannot be 'in' the world since the only world we have is the world we know.

Now all this argument, or approach to an argument amounts to is an elaboration of the implications of the fact that the categories are necessary but not sufficient conditions for the possibility of experience. At the level of judgment the difference between necessary and sufficient conditions need not be 'felt', in the sense of becoming explicitly thematized, since in judgment

the categories only need be presupposed as operative. But in science we not only frame laws consciously in accordance with the categories, presuppose them in testing laws, but above all search nature to see in what way they are operative. Ultimately, if one accepted a regulative interpretation of the categories, science would also be seeing if they were operative (although we could never 'know' the categories not to be operative, since this would require us to possess some categorial scheme other than the only one(s) we by hypothesis do possess; we could only reach a point of ineliminable frustration with respect to our categorial scheme, never cognitive assurance of their negation). Two of Kant's dicta on the nature of empirical laws will give some sense to their deep connections with the general structure of our categorial system. Firstly, he says, empirical laws, although they are not derived from pure understanding, are only special determinations or specifications of the pure laws of the understanding (A 127-8; B 165). Later on we find: the pure laws of the understanding are variable expressions which take empirical laws as their values (A 159 = B 198). Neither of these formulations is altogether satisfactory since neither adequately distinguishes between how the categories relate to judgment in a way that is different from their relation to empirical theory (empirical laws). The following formulation seems more adequate: the laws of the understanding are a partial epistemic semantics, for which empirical theory provides the completion; the

the categories, then, are a blueprint for science, and a successful science fulfills the promise of the categories by 'specifying' in empirical detail the connections prescribed by them. This points to a gap in Kant's account of the relation between the pure and schematized categories. The schematized categories tell us what types of connections must hold in the world if we are to be able to make judgments; they lay down the conditions under which the pure forms of judgment can be operative in experience. Science fills in the detail for these connection types. But this is surely something quite different from a simple spatiotemporalization of the pure judgment forms. The spatiotemporal counterpart of a subject of a judgment is a spatiotemporal continuant, or an 'individual' in Strawson's sense of the term. What the First Analogy says, on the other hand, is that we could not make judgments unless there existed a law-governedness amongst appearances in their spatiotemporal relations; and this requirement is not compatible with the view the world be 'ontologically' composed of individuals since individuals are only relatively long-lasting. And this naturally raises the question of the relations between the schematized categories as conditions of experience and the pure forms of judgment in their spatiotemporal guise. We shall deal with these problems subsequently. Nonetheless, it is evident that there exists a more intimate connection between the conditions of experience and science than between these conditions and judgment.

Before I can argue that science not only presupposes the existence of things in themselves, but has them for its proper aim and goal, I must first retrace some of the problems which surround the Idea of System.

10. Reason in its hypothetical employment must attempt to gather instances of effects under one rule, and then treating (holding) this rule as universal and necessary test further instances according to it (A 647 = B 675). Because we have no license by which we can assert that these results prove the truth of the hypothesis the adopted rule cannot but remain problematic, even if all future predictions receive corroboration. Again, by treating theories as necessary and universal we only approximate the rule to true universality. As we saw earlier, one way of partially mitigating the skeptical hesitancy attendant to our approximating procedures is to demand that all empirical theories be systematizable, and it is only the systematic unity of empirical theories which separates them as scientific knowledge from ordinary knowledge (A 832 = B 860). When this suggestion was originally put forward I claimed that this only made sense if we supposed nature to be structured in a fairly specific fashion (hierarchily stratified powers paralleling our hierarchial system). In the Transcendental Dialectic a supplement to this account emerges in the problem of the proper schema for the idea of systematic unity, and the general status of the ideas of reason themselves.

The problematic of reason arises because questions

about it all concern only its proper employment or use. This stems from Kant's distinction between reason and understanding wherein reason, unlike understanding, is never in immediate relation to its object (A 643 = B 671); its only work being the ordering of concepts. With this distinction made Kant builds up an analogy between reason and understanding: in the same way that the manifold of appearances is collected into unity by means of concepts in the understanding, so in reason the manifold of concepts (empirical theories) is collected into unity by means of ideas (A 644 = B 672). In this way, added to understanding's activity of securing distributive unity, it is further guided by reason to the attaining of an overall or collective unity. Because reason is not in direct 'contact' with external objects it can in no way determine them, and by extension it cannot determine the actual shape or final order the concepts of the understanding will have in relation to one another. Reason, then, can have only a regulative and not determinate employment; its idea of systematic unity being a 'mere' idea, a focus imaginarius, because nothing in experience can correspond to it. The idea itself is lacking in objective validity; it does not appear to have a real object to which it corresponds.

Kant extends the analogy between reason and understanding by suggesting (A 664-5 = B 692-3) that just as the acts of understanding are determined through their schemata in respect to the objects given in sense intuition, so too is the unity of reason determined by its

ideas in regard to the conditions under which and the extent to which understanding ought to combine its concepts in a systematic fashion. The analogy to the schema of the understanding for reason is that of the maximum in the "division and unification of the knowledge of the understanding under one principle" (ibid). This entails a thinking aside of the limitations and restrictive conditions under which the understanding normally operates, for reason concerns itself with what is absolute and complete for any given series of conditions. While this seems to suggest a purely logical and heuristic use of the idea of unity in order to bring understanding into complete harmony with itself, one must wonder how reason can accomplish this task unless its ideas possess objective validity. This has led some commentators to the suggestion that there are two conflicting interpretations of the regulative principles: a subjective one, which is claimed to be a hangover from Kant's pre-critical period, and an objective interpretation based on the principle, integral to the idealistic tradition, that the whole precedes our knowledge of its parts, and it is the whole which a priori conditions and makes possible the parts as they stand in relation to that whole (A 645 = B 674).<sup>14</sup>

The contrary to this latter thesis is unacceptable because nature considered outside of the lawful a priori structure of the understanding is unthinkable; and it is the categorical framework which is also the framework within which the natural world appears, so that to ignore the unifying function of reason would, in a sense, be the same as

ignoring the law-like unity of the world.

For with what right can reason, in its logical employment, call upon us to treat the multiplicity of powers exhibited in nature as simply disguised unity, and to derive this unity, so far as it may be possible, from a fundamental power -- how can reason do this, if it be free to admit as likewise possible that all powers may be heterogeneous, and that such systematic unity of derivation may not be in conformity with nature? Reason would then run counter to its own vocation, proposing as its aim an idea quite inconsistent with the constitution of nature. (A 651 = B 679)

It is thus thought that the powers of understanding conjoined with reason's unitary perspective of nature would accordingly transcendently ground the methodological research program of the search for a systematic order of nature.

How are we to evaluate this claim of objective validity? One natural objection to this theory is that it does not appear to allow for the possibility of failure. It would therefore be more reasonable to say that this regulative principle is nothing but a subjective fiction which helps us in our scientific inquiries. This is the position of the Dissertation, and appears to be echoed in various places in the text under discussion. In ID regulative principles are regarded as principles of 'convenience', which rest wholly on subjective grounds, and are adopted by the intellect in accordance with its own abilities, simply in virtue of their ease and practicability (ID: ~~30~~30). This view indeed seems fully consistent with the position that regulative principles are logical and methodological tools, based on a hypothesis or heuristic fiction; the unity of nature being only a projected unity, offered as a problem or task to reason (A 647 = B 675).

Yet Kant explicitly says that regulative principles "carry their recommendation directly in themselves, and not merely as methodological devices" (A 661 = B 689).

Now there is a contradiction here, and it is, I wish to suggest, intrinsic to the theory of transcendental idealism. If we look back at Kant's argument for system this tension will come through clearly. Only by placing empirical theories into a hierarchial system can necessity be imputed to them. But how can the placing of theories into a system provide them with anything more than the logical necessity which accrues to them as a result of their being derivable from higher order principles? Kant's assumption is that the highest principle -- the unconditioned -- would in virtue of its own intrinsic necessity supply necessity to the rest of the system. Necessity 'flows down' from that which is necessary in itself to that which is necessary through its relation to what is necessary in itself. The very idea that laws might hold with necessity depends upon their being related to a principle necessary in itself, and thus upon the referent of such an unconditioned principle. In other words, Kant does not think that the transcendental unity of apperception can function as a sufficient ground for natural necessity, and therefore he does not think that the shift from a physical to an intentional account of necessity can be completed. The necessity of physical laws can only be conceived with respect to the unconditioned, but the unconditioned cannot itself be part of experience (so Kant says), and our ideas of the uncondi-

tioned possess only the status of heuristic fictions. The system of science, which requires an unconditioned principle for its completion, is necessarily incapable of completion. Since the unconditioned can form no part of the system of science, theories must take their necessity not from the unconditioned itself but from the ideas which form the focus imaginarius of the system. They, however, cannot impart real (non-intentional) necessity to scientific theories for that would entail treating them (their objects) as real. Without the ideas of reason we could not conceive of what a complete science of nature would be like, or, what is the same thing, what it would be like for laws to hold with necessity; but we cannot operate with the ideas of reason (really) since they go beyond the bounds of experience. Scientific theories do, then, possess nothing more than logical necessity in virtue of their place in the system of science, and because the grounds of necessity are in principle unknowable, a science of nature is not really possible.

What I now wish to argue is that the whole problem of things in themselves and the ideas of reason devolves into the problem of the relation between the conditioned and the unconditioned. In what follows I shall attempt to argue: a) that Kant's account of the formation of the ideas of reason is a bit of flummery, and a more accurate account shows the ideas in question to be directly concerned with empirical knowledge; and b) that the origin of Kant's conception of the thing in itself as incogni-

zable (= unknowable), and therefore for his assumption that the real grounds of experience lie outside of experience, derives from his pre-Critical metaphysics, which, I hazard, Kant simply took as a premise when composing the First Critique.

11. Kant maintains that reason has three regulative principles for its employment: the self, subject or 'I' viewed simply as a thinking self; the world; and the sufficient cause of all cosmological series, i.e. God. Kant also mentions a fourth possible idea: the purposive unity of all things according to teleological laws (A 687 = 715). We shall leave Kant's fourth idea aside. The pure concepts of reason, or transcendental ideas, will determine how the understanding is to be employed in dealing with experience in its totality. Kant originally claims these concepts are generated by the application of the form of syllogisms (Vernunftschluss) "to the synthetic unity of intuitions under the direction of the categories" (A 321 = B 379). What such a baroque process of concept formation might have yielded is impossible to tell, for it is not the form of syllogisms which Kant employs to generate the ideas of reason but the three forms of synthesis for the relational categories. Thus we are to seek for the unconditioned with respect to the categorial synthesis (which yields the concept of the self), the hypothetical synthesis (which yields the concept of the world), and the disjunctive synthesis (which yields the concept of God). Nonetheless, Kant has a point in saying that these three ideas derive from an application of the

syillogistic form, for he justifies his employment of the idea of the 'unconditioned' by arguing that the relation of condition to conditioned is the controlling logical idea behind syllogistic inferences, and since reason is the faculty of drawing inferences the application of the unconditioned -- the condition for all possible conditioneds -- to the forms of synthesis for the relational categories amounts to a discovery of the ideas of reason.

Kant argues for the logical centrality of the unconditioned as follows. The proposition, 'Caius is mortal', could be derived by the understanding alone from experience; but in such a case the proposition would remain unsupported by any other propositions. Alternatively, we could derive this proposition from a syllogism having as its major premise, 'All men are mortal'; in this case the truth of the conclusion would be licensed and guaranteed by the truth of the major premise. Now the process of licensing the truth of a proposition can go on indefinitely since for nearly every syllogism we can construct a prosyllogism whose major premise is wider or more universal than the previous (pro-)syllogism. Thus to our original syllogism we can add the premise, 'All living things are mortal', which would condition the truth of the proposition, 'All men are mortal'. Because we can in all cases logically challenge the truth of the conditioner, the truth of the conditioned cannot be guaranteed until we have reached the unconditioned conditioner for the series of conditions in question. From this Kant concludes that the transcendental concept of

reason is the totality of conditions for any given conditioned (A 322 = B 379).

We can leave this argument as it is. However, Kant cannot generate his ideas of the Subject (Self) or God by applying the notion of the unconditioned to the categorical and disjunctive syntheses respectively. This follows from the consideration that all modes of synthesis relate only to construction of objects (or judgments) of experience from sensible appearances (or concepts). In any judgment, Kant informs us, "we can call the given concepts the logical matter (i.e. matter for judgment), and their relation (by the copula) the form of the judgment (A 266 = B 322);" and the synthesizing process by which we bring concepts to the objective unity of apperception is all that is intended by the copula 'is' (B 142); hence judgment and synthesis are one and the same, and synthesis can be nothing more than the combining of percepts (concepts) to yield a judgment about an object (or state of affairs in the world). If every synthesis is finite or conditioned, requiring supplementation by further syntheses, then the application of the notion of the unconditioned to this process of supplementation can only yield the concept of the totality of all the objects of experience, the totality of appearances, or, quite simply, the world. And, indeed Kant confesses that "nature is properly the only given object in regard to which reason requires regulative principles (A 684 = B 712);" the concept of the world -- the unconditioned totality of appearances -- being the regulative principle in question.

Consequently, if we were to seek for the absolute of the categorical synthesis -- where the concept serving as the condition functions as the subject of the judgment and the conditioned is identified as the predicate -- we should seek for that which is always a subject and never a predicate, i.e. the unconditioned substance of all appearances. For the time being the world as an unconditioned substance can be said to be equivalent to the world considered as a closed and unified law-like totality, which is to say, that which is a subject and never a predicate is the world with respect to the system of laws which constitute it as a totality. We shall come back to this later. Why Kant should have thought of the self here is a little mysterious; the self cannot, as a phenomenal self, have priority over any other appearance, and so there is no reason to expect it to have privileged relations with the categorical synthesis. As a noumenal, active or spontaneous self, the self is never an object of synthesis; moreover, as noumenal the self has no states, and so while one may say of it it is a subject and never a predicate, one must add that it never has predicates either (except, perhaps, for judgments themselves). Since as we shall see momentarily, Kant does not really think that any unconditioned substance can have a predicate which conditions it, a more charitable line can be adopted. Both the syntheses of inner and outer sense should receive separate accountings: the absolute of the categorical synthesis with respect to inner sense is the self; the absolute of the categorical synthesis with

respect to outer sense is the totality of appearances according to laws. This gives an appropriate ontological twist to the unconditioned, which is as it should be. There are two Substances: persons and things; the epistemological formula for the self is the moral law, for things the categories. If Kant insists that the only subject which is never a predicate is the self, then his world has only one substance: 'I'.

As opposed to his confusions concerning the categorical synthesis, Kant's contention that the absolute of the hypothetical synthesis is the concept of the world as such (as an object in its totality) is perfectly reasonable -- with some slight modification. In the hypothetical, if ...then, judgment we employ the first proposition as the condition and license for asserting the second or conditioned proposition. In the synthesis of appearances this is equivalent to the establishment of causal relations between appearances, where the appearance of  $x$  at  $t^1$  is a necessary condition for and brings about the appearance of  $y$  at  $t^2$ . The absolute of the hypothetical synthesis, then, would be the totality of all causal sequences.<sup>15</sup>

The absolute of the categorical synthesis corresponds to the concept of a world substance: the First Analogy. The absolute of the hypothetical synthesis corresponds to the totality of causal sequences: the Second Analogy. Therefore the absolute of the disjunctive synthesis should correspond to the totality (community) of substances mutually determining each other as coexisting in one space: the Third Analogy. Granting Kant's curious interpretation

of the disjunctive, either...or, judgment, I think this works. In the disjunctive judgment neither proposition functions exclusively as the condition for the other, but both together mutually condition one another and conjointly determine the totality of the sphere of knowledge in question. "Finally, the disjunctive judgment contains a relation of two or more propositions to each other, a relation not, however, of logical sequence, but of logical opposition, in so far as the sphere of the one excludes the sphere of the other, and yet at the same time of community in so far as the propositions taken together occupy the whole sphere of the knowledge in question... There is, therefore, in a disjunctive judgment a certain community of the known constituents to each other, such that they mutually exclude each other, and yet thereby determine in their totality the true knowledge (A 74 = B 99)." When this is transposed into the realm of the synthesis of appearances the point is not that the truth of different propositions exclude one another and yet conjointly determine the totality of possible knowledge in the area under dispute, but that different substances should mutually exclude (repel) one another and at the same time depend<sup>on</sup> and maintain each other in their existence. In order to make sense of Kant's claim that it is God and not the absolute community of interacting substances which expresses the unconditioned of the disjunctive synthesis we need only assume that Kant regards this totality as itself essentially conditioned, in which case the unconditioned of the totality could form no part of

it, and would therefore have to be essentially incognizable, like God. This seems to me Kant's always silent dogmatic premise: whatever is cognizable is essentially conditioned, and therefore the unconditioned is necessarily incognizable.<sup>16</sup>

The results of this short investigation can be generalized. Kant's account of the formation of the ideas of reason amounts to a dissembling of the problematic status of empirical knowledge. Each of the three ideas of reason formed on his account are things in themselves which represent the conditioning ground of conditioned totalities. But things in themselves on the Kantian view are essentially unknowable; therefore no questions concerning the inner nature of reality can be framed which possess unequivocal cognitive significance. In eliminating God and the Self as legitimate ideas of reason (for outer sense) I have been interested to demonstrate that the only relevant or pertinent question to be asked concerning synthetic knowledge is whether it is conditioned or unconditioned, or, to put the same point more positively, to say that the problem of human knowledge and the task of science is to gain knowledge of the unconditioned. By denying that any form of the unconditioned is knowable Kant tacitly denies the possibility of complete, determinate knowledge of the physical world; more explicitly, he is denying that we can comprehend the inner structure of the world since the source of the world and of world order is not itself 'in' the world. The referents of the transcendental ideas, Kant says,

ought not to be assumed as existing in themselves, but only as having the reality of a schema--the schema of the regulative principle of the systematic unity of all knowledge of nature. They should be regarded only as analogs of real things, not as in themselves real things. We remove from the object of the idea the conditions which limit the concept provided by the understanding, but which also alone make it possible for us to have a determinate concept of anything. What we then think is a something of which, as it is in itself, we have no concept whatsoever, but which we none the less represent to ourselves as standing to the sum of appearances in a relation analogous to that in which appearances stand to one another. (A 674 = B 702)

And this sounds very much as if Kant is still maintaining, albeit now with a skeptical disclaimer attached to it, his pre-Critical view that we know only phenomena but that we can and must think the noumenon.

If, in connection with a transcendental theology, we ask, first whether there is anything distinct from the world, which contains the ground of the order of the world and of its connection in accordance with universal laws, the answer is that there undoubtedly is. For the world is a sum of appearances; and there must therefore be some transcendental ground of appearances, that is, a ground which is thinkable only by the pure understanding. (A 696 = B 724)

The real is noumenal and unconditioned, appearances are phenomenal and conditioned. Kant does, it appears, have an ontological, or, more precisely, an onto-theological interpretation of things in themselves -- at least in this context. Things in themselves cannot be what we know perspectively as phenomena, from the perspective, that is, of human finitude constituted by a passive sensibility and discursive intellect, for then to have knowledge of the unconditionally 'real' would only be a matter of overcoming the limitations of our perspective, and since Kant thinks that this is necessarily impossible,

then his ontology must be logically prior to his epistemology. Epistemologically, the most Kant can argue is that the status of things in themselves as the unconditioned is problematic; perhaps things in themselves are unknowable, perhaps essentially so; but Kant's continual insistence upon the fact that the unconditioned is essentially incognizable must give rise to the suspicion that an independently arrived at ontological thesis lies behind his 'limits of knowledge' doctrine.

In Chapter VI I shall attempt to offer an interpretation of the Principles of Pure Understanding which takes up the task Kant left incompleated in his formation of the ideas of reason, that is, to provide a model or blueprint of the unity and totality of the world (the world from the point of view of the unconditioned) which it is the task of science to detail.

12. One stem of Kant's limits of knowledge doctrine derives from his perspectivism. Kant's way of dissembling the existential and ontological implications of perspectivism is to set it off against a putative intuitive intelligence; but this argument (comparison), we have suggested, fails. All the judgments of finite beings are conditioned; therefore the sublating of their finitude is only possible if they can view experience from the perspective of the unconditioned. This much, at least, seems to follow directly from our critical account of the formation of the ideas of reason. Now in order to make more plausible my contention that Kant's dogmatic interpretation of things in themselves should be eliminated

and a perspectival-ontological interpretation of the relation between phenomena and noumena put in its place I must first of all strengthen my conjecture that Kant's theory of the unconditioned (implying the incognizability of it) is an uncritical remnant of the metaphysic of the Inaugural Dissertation. The best method of showing this is to demonstrate that Kant's view of the relation between God and world remains unaffected by his adoption of a Critical stance; and all I require for this is a demonstration that the metaphysico-ontological problem which God's presence was meant to answer in ID still persists in the Critical theory, and therefore still requires and (less explicitly) receives God as its answer. If the reader is inclined, as I am, to regard God as an illegitimate answer to any metaphysical question, then he should be predisposed to my suggestion that Kant is working with a false Metaphysics (Ontology) in both ID and the First Critique. The heart of the metaphysic which drives us toward God says: the world as an immanent totality is a conditioned totality. It is to this thesis I shall wish to object. As my guide into the transition from ID to the First Critique I have adopted Martin Scott-Taggart's (1972) persuasive "The Ptolemaic Counter-Revolution".

Two conceptual displacements mark the shift from ID to the First Critique: in place of talk about things or substances represented we receive talk about our representations of things or substances; in place (in part only) of discourse about God's creating, ordering

and connecting of things, we receive discourses about man's ordering and connecting perceptual manifolds. This point can be made perspicuous by taking the following sentence: "The transcendental unity of apperception forms out of all possible appearances, which can stand alongside one another in one experience, a connection of all these according to laws (A 108)"; and substituting into it: 'God' for 'transcendental unity of apperception'; 'substances' for 'appearances' and 'representations'; and 'world' for 'experience'; we would thus get: "God forms out of all possible substances, which can stand alongside one another in one world, a connection of all these substances according to laws" -- a sentence which could have appeared in ID or been written by Leibniz.<sup>17</sup> Now what is the conceptual (theoretical) connection between the two displaced items, viz., God and substances represented? As a first hint, consider this passage from ID: #2.

For by taking several things together you achieve without difficulty a whole of representation, but not thereby the representation of a whole. Accordingly if there happened to be certain wholes consisting of substances, and these wholes were not bound to one another by any bond, the bringing of these wholes together, whereby the mind forces the manifold into an ideal unity, would not give expression to anything more than a plurality of worlds held together in a single act of thought. But the bond constituting the essential form of the world is seen as the principle of the possible influxes of the substances which constitute the world. For actual influxes do not pertain to the essence but to the state, and the transient forces themselves, which are the causes of the influxes, suppose some principle by which it may be possible that the states of the several things whose subsistence is none the less independent each from the other should be related to one another mutually as grounded determination. If

you depart from this principle you are debarred from positing as possible a transeunt force in the world.

In perception we have a whole of representation but not necessarily a representation of the whole: the whole of representation would express no more than an ideal unity of the substances represented unless those substances were in real causal connection with one another; if there were not actual transeunt forces connecting substances those substances could not be accounted as part of the same 'world' ('whole') and therefore there could be no (objectively valid) representation of the whole. Notice one of the things which Kant's point about transeunt forces denies: that monads can be the stuff of the world, since they are what they are essentially, regardless of what anything else is or might be. Each monad is a world unto itself; because it is for itself the whole of reality it is a necessary substance, i.e., it is necessarily unconditioned by the existence of any other substances. As Scott-Taggart rightly remarks, Kant wanted to deny, as logically (metaphysically) absurd and impossible, the contingency that God, being more whimsical than he ought to be, "should annihilate all the monads in the world but one: and yet this one should be unaware of the change."<sup>18</sup> To state that for the possibility of a representation of the whole the items of the whole must be in causal connection is not adequate to guarantee the possibility of a representation of the whole; what more is needed is that the items represented be causally dependent on one, and only one, God: many gods could

maintain many worlds. (Is Kant here pointing out a heresy in Leibniz?) The causal dependency of the world on God follows straightaway for Kant from his denial that any substance is necessary or unconditioned. I shall return to this point momentarily. Thus there could be no representation of the whole unless substances causally interacted, and substances could not causally interact unless God provided a common bond between them.

By 1781 the situation had altered. While Kant still believes that there cannot be a whole of representings without a whole represented, he no longer grants himself as unproblematic his first premise: there is a whole of representation. Thus the new, uniquely Critical question: 'what are the necessary conditions for the possibility of experience in general' = 'under what conditions can there be a whole of representings?' In virtue of the needs for a unitary consciousness and taking into account the temporal form of inner sense, a whole of representings presupposes a representation of the whole, i.e., there could not be a unitary consciousness unless there were causal connections between the parts of that whole. Thus that there is a whole of representings entails (that sometimes) there is a whole represented; that there are wholes represented is possible only if there are causal bonds between the parts of wholes. It is in this way that Kant makes good his original arguments against Leibniz.<sup>19</sup> None of this, however, touches on what the wholes of representings are representations of. Quite the opposite: if there is a whole represented it must represent the

whole of substances connected through transeunt forces, whose relations are necessary only if they were created and ordered by a single deity.

Again, the real difficulty is submerged in the context of judgment and only surfaces in the scientific context. Kant does not appeal to God to establish that there can only be a world if there are causal connections between the items of that world; he argues instead that it is necessary for the possibility of consciousness that there be real causal connections. The 'nature' of those real causal connections is irrelevant to the epistemological question as to whether or not we must presuppose that they exist. However, once Kant has established all his structural truths about the world in the absence of God, he can no longer employ God to explain how it is or why it is those structures 'hang together' in the way they do. Thus when those structures become explicitly thematized in science, which desires to explain what is otherwise simply assumed, Kant must confess that the whole is ungrounded and that God (or one of his surrogates: the Self or the World) is the regulative idea of the totality of the world system, that is, He is really the ontological source and ground of world order, but we are no longer permitted to say so (that fact cannot be said, only whistled). And this explains why Kant says that we have no insight into the necessity of causal sequences; we only know that it is necessary for there to be such sequences and we are thus entitled to hold our empirical laws as necessary. We have no insight into physical necessity

because the grounds of that necessity are hidden in the unconditioned: God. In this (limited) sense, transcendental idealism is a skeptical theory of knowledge: structural truths about the nature of experience and the world are established and at the same time the real grounds for those truths are 'bracketed' out as legitimate objects of knowledge.

To see what all this amounts to we need only look at some central metaphysical passages from ID (#18-#22) which contain, I believe, the metaphysical theory Kant tacitly presupposes throughout the First Critique. Kant commences by stating that a whole out of necessary substances is impossible: an object (or the world) cannot be composed out of monads. If the being of a substance were established apart from its dependence on any other substance whatsoever, then ipso facto, that substance could in no way be dependent on the existence of any other substance. Since a necessary substance is wholly self-subsisting there can be no form of real interaction between it and any other substance, which is to say, a whole of representation is not a representation of a whole when the items of the represented whole are necessary substances: knowledge of wholes in a world composed of necessary substances would be ideal and not real because the wholes (objects) of that world would be ideal and not real. If we wish to hold the opposite we must then say "a whole of substances is a whole of contingents, and the world, in its essence, is composed of mere contingents (ID: ~~19~~ 19)." This entails that the relation between a necessary

substance and the world can only be that of cause with caused (condition to conditioned, where the condition is itself unconditioned), and this cause cannot be a part of the world, for then it would stand in a relation of mutual dependence with mundane, contingent entities. The cause of the world is extra-mundane. Moreover, all mundane substances are caused by one necessary being: if different necessary beings each had its own causal dependents, then their 'effects' could not interact because there could be no mutual interaction between the causes themselves, i.e., since necessary beings cannot interact their effects cannot interact either. (This argument, by the way, shows how weak Kant's position is vis-a-vis Leibniz. He (Kant) must immediately backtrack after making this claim and say each creation of different necessary beings would be a 'world', in the technical, metaphysical sense of the term, and in all metaphysical truth it is possible for there to be several worlds 'outside' one another. Thus Kant's position tacitly rests on the assumption that there can be only one God. The demand for only one God has nothing to do with piety. More importantly, if it is possible for there to be many worlds outside one another, then it would seem to be equally possible for there to be an infinite number of monads, each with its own creator. But if this is metaphysically plausible, then is it not more plausible and rational to argue that there exists an infinite number of monads created by one God who established a harmony between them?) Hesitantly, Kant concludes that if it is necessary that a given world

all be created by one being, then the converse inference must hold: because a given world has one unique cause there will be a common bond amongst all the substances of that world, and therefore "the primitive bond of substances would not be contingent but would be necessary because they are all sustained by a common principle, and so the harmony proceeding from their very subsistence, founded on their common cause, would proceed according to common rules (ID: 22)." Kant's confession that he does not really see why this argument works (ibid.) indicates how broken backed the enterprise of ID really is. There is no particular reason why one creator should give a common principle to all his creations; and conversely, one can at best hope that there is a common cause of the world to explain why mere contingents interact and join in a necessary unity. If there is no common principle or ground for all entities then their primitive bonds would be contingent; and this does not mean that the common rules by which they proceed would be contingent, but rather, there would be no such rules at all. And this, of course, is the main point: a world of mere contingents can have no necessary relations between them unless there is a common cause or ground to them; if we reject -- as we must -- an appeal to God as legitimate or even illuminating, then we must either reject causal relations as being necessary or that the world is composed of solely contingent substances. But we cannot reject the former because, whatever the difficulties surrounding the modal operator may be, what it (the

necessity operator) and Kant's theological tale both point to is the problem of there being any rules, order or structure in the world at all. And we know, moreover, that spatiotemporal law-governedness is a necessary presupposition for the possibility of any knowledge whatsoever. Kant cannot, then, slip neatly between Leibniz and Hume unscathed; he must permit of there being mundane, necessary beings or lapse into Humean skepticism.

13. Disputably, the purpose of the ideas of reason is to secure the extension of the categorial framework so that it may be able to be plausibly seen as exemplified in the empirical laws of science. More cautiously, they serve the function of guiding the understanding in its attempt to construct a universal system of empirical laws, where the understanding -- whose proper employment outside the context of judgment is underdetermined -- is unable to guide or regulate itself. These ideas, then, are intended to promote and aid in the extension and systematization of empirical knowledge without ever running counter to the vocation of the understanding and its proper restriction to the empirical (A 671 = B 699). The hinge upon which the relations between the understanding and reason moves is the concept of unity, and by extension, the concept of totality: science's task is to establish empirically what the categories have confirmed only transcendently and formally, namely, the unity of nature according to laws. The idea of the systematic unity of empirical laws provides the only possible guiding thread we might have for this enterprise; yet the idea of system,

and those of reason re-introduce for epistemological reasons concepts which are cognitively ambiguous:

"Appearances demand explanation only so far as the conditions of their explanation are given in perception; but all that may ever be given in this way, when taken together in an absolute whole, is not itself a perception. Yet it is just the explanation of this very whole that is demanded in transcendental problems of reason (A 484 = B 512)." We must thus recognize that when Kant argues in the *Analytic* that a whole of representation presupposes and entails a representation of the whole, the two sides of this equation are not equal: we possess, have or are the whole of our representings, but we can only presuppose or have as a presupposition a representation of the whole in general (where whole = the totality of appearances; we of course have representations of the whole where 'whole' = some particular object of experience or state of affairs). Having deserted the ontological postures of ID, Kant can no longer dogmatically assert that there would be no representation of the whole unless there existed a source or ground for it; that there be such a unity of experience is already a transcendental presupposition for the possibility of our having a whole of representings. Thus to 'ground' the legitimacy of positing or postulating that there must be a ground or source for the whole represented, Kant must argue to that ground, keeping to the purely epistemological resources which the *Critical* theory makes available.

This portrayal of Kant's ontological problematic

can do duty as well in those contexts where Kant's language would seem to point to a parallel with his pre-Critical theory that actual influxes do not pertain to the essence of substances but only to their states: "we cannot know these objects (appearances) as things in themselves, we must yet be in a position to think them as things in themselves; otherwise we should be landed in the absurd conclusion that there can be appearances without anything that appears (B xxvi)." This plainly is the judgmental correlate to the problems of totality and the unconditioned: we always require an incognizable and unconditioned ground for the cognizable and conditioned. Notice, however, that since judgments as syntheses can be objectively valid (true representations of a whole) and nonetheless because finite require supplementation by further judgments, and thus in this sense not be representations of the whole, that there is little to choose between monad type entities as lying behind the appearances or positing God as the unconditioned source of appearances. Either way the point goes through that we cannot get from experience alone a complete representation of the whole, and that therefore the whole of appearances alone must be balanced against some non-appearing X. Thus when Kant says the understanding must think for itself an object in itself "which is the cause of appearance and therefore not itself an appearance (A 288 = B 345)", we can picture to ourselves a monad of whose essence we know nothing but whose accidents manifest themselves in terms of transeunt forces, or we can consider this passage as the Critical counter-

part of: "Moreover no necessary substance has a bond with the world except as cause with caused, and accordingly not as a part with its complement to the whole... Therefore the cause of the world is an extramundane entity and so is not the soul of the world nor is its presence in the world local but virtual (ID: § 19)." In this way there is no difference between the ontological problem of judgment and the ontological problem of science: because necessary beings in their essence are incognizable for Kant, there is no philosophical difference between monads and God: the point is that they be there. Not surprisingly, Kant's general argument to the unconditioned covers both cases.

What is required in order to make sense of our locutions concerning things in themselves is an argument to show how the categorial concepts employed in the constitution of the phenomenal world entail (require) their own 'regulative' extension into the realm of things in themselves. But this is only to say that we must recognize that what makes our reality empirically and not transcendently real is that we can only know it as contingent and conditioned, as lacking in self-sufficiency. Since on Kant's own premises this is inadequate, the world must be 'thought' as connected to the unconditioned. The understanding deals with the world in its contingency; reason attempts to think the world in its necessity. Thus Kant's general pattern of argument to the unconditioned:

In the first place, it is evident beyond all possibility of doubt, that if the conditioned is given, a regress in the series of all its conditions is set us as a task. For it is involved in the very concept of the conditioned that something is referred to a condition, and if this condition is again itself conditioned, to a more remote condition, and so through all the members of the series. The above proposition is thus analytic, and has nothing to fear from a transcendental criticism. (A 498 = B 526; cf., also, A 584 = B 612; B xx; Prol., ~~XX~~32)

If we admit -- and from the Analytic we know we must -- that we have a whole of representings, and every whole represented is partial -- a conditioned object -- then we are necessarily set the task of gaining a representation of the complete whole. There are two aspects to this: Firstly, from the concept of the conditioned together with the principle of sufficient reason it logically follows that if the conditioned is given, then we must seek after the unconditioned. Since no specific determination of the conditioned is specified here, this much of the argument is 'analytic'. Secondly, if we are to claim objective knowledge of conditioned objects, then we must be prepared to admit these objects are related to a ground whose existence does not depend on the subjective conditions for possible experience. Presenting the argument in two parts illustrates its logical framework and an application of that framework to a case. Another variation on the same principle is at work in the regress on the conditions for free action argument to spontaneity. The two arguments together are complementary, outlining from an epistemological starting point the ontological thesis that there are minds and a world: minds and

world interact to produce appearances: minds are not reducible to appearances if and only if thought sequences (actions) can be inaugurated unconditionally (spontaneously): appearances are not reducible to the auto-affectations of minds if and only if they are really connected with an independently (unconditionally) existing thing (X). This represents the Cartesian, ontological infrastructure of Kant's system. If the arguments of Chapter II and this section are correct, this ontological structure cannot be eliminated in favor of some pristine, ontologically neutral epistemological theses.

14. Scientific progress presupposes the existence of things in themselves in order to provide an independent input into the learning situation; science has knowledge of the unconditioned (things in themselves) as its goal or aim. These two propositions turn out to be specific cases of two more general critical theses: there cannot be appearances unless there exists some autonomously existing thing which appears; if we claim to have knowledge of the conditioned, knowledge of the unconditioned is set for us as a task. In the last chapter I argued that the inner motive of the Transcendental Deduction was to produce a non-essentialist theory of knowledge; and this has turned out to be accurate in that Kant cannot conceive of causal connections being applicable to unconditioned entities. In the present chapter I have attempted to demonstrate that Kant's philosophy of science itself presupposes the truth of essentialism (the ground of world order and physical necessity lies in the nature

of the things themselves), that is, it presupposes the truth of the very theory he attacked in the Deduction. And moreover, the theory of appearances must presuppose an essentialist framework since there exists no epistemic argument to prove the inaccessibility of things in themselves to knowledge.

As a result of our exploration of the tensions in Kant's idealism we saw that it must move either in the direction of skepticism or essentialism. Essentialism for Kant is the doctrine that there exist unconditioned entities that can be known qua unconditioned. Space and matter are the two possible sources of alterity in a causal universe. Since space is often thought to be reducible to relations between material entities, I shall confine myself in what follows to the problem of matter. I shall argue that Kant has a theory of matter in which the 'parts' of matter are unconditioned, but not in such a way as to make causal relations impossible.

### C. Matter as the Unconditioned

15. In the naive view of the world both primary and secondary qualities are attributed to objects as real properties of them. From a scientific perspective the possession of secondary qualities is often denied to the objects of experience; predicates like heat, color or taste are said to be ontologically deficient, and only primary qualities -- inertia, mobility, hardness, impenetrability and extension -- are said to be proper qualities of body. From the perspective of transcendental idealism "all the qualities that make up the intuition of

a body belong merely to its appearance (Prol, ~~13~~)", and therefore neither primary nor secondary qualities can be granted real existence. In atomist cosmologies (the primitive scientific world-view) the discovery or postulation of atoms as that out of which all material bodies are composed answers not only the problem of simplicity, but serves as well as a partial answer or solution to the problem of matter: atoms are the stuff (substance) and the only stuff the physical world is made of, although this stuff might rely for its order and activity on a powerful, exterior stuff, viz., God. Note, however, that there is no necessary connection between the problem of simples and the problem of matter: in appearance impressions and/or ideas could be the simples from which all complexes are constructed, but these complexes could be ontologically derivative, and only spirits, say, counted as the proper stuff of the universe, and these spirits could be either simple or complex.

Kant assumes that if the empirically real world contained true simples then these simples would be, ipso facto, ontologically independent entities; if ontologically independent (self-sufficient) then unconditioned; if unconditioned then things in themselves. But this is impossible since unconditioned entities must depend on nothing else for their existence; and if they are self-sustaining then they cannot be in real causal connection with other mundane entities; if not in real causal connection with other mundane entities then not

cognizable. Accordingly, there can be no simples in appearance: the postulation of atoms is illegitimate, and monads, if they exist, are no 'part' of the world of appearances. Now if no simples are to be found in the world of appearances, then the whole represented is a whole of contingents (conditioneds); therefore the world of appearances is ungrounded from within, and our knowledge is in no way of things in themselves, which is to say, the phenomenal world is transcendently ideal. Although Kant, to my knowledge, nowhere explicitly states his position in precisely this way, this argument seems to be presupposed in the arguments of the Second Antinomy, and generally to lie behind Kant's diverse meditations on matter. As it stands it is slightly misleading in that it leaves out of account Kant's theory of space, which ties in subtly with his views concerning the ontological status of matter. In so far as it is possible, we shall consider Kant's theory of matter, the relations between the problems of simples and matter, and the legitimacy of Kant's indirect demonstration of the truth of transcendental idealism from the antinomy of simplicity apart from his doctrines on space.

16. One of the theories of matter which Kant rejected specified that all material things were composed of basic particles -- atoms or corpuscles -- which were regarded as being absolutely impenetrable and homogeneous in all ways except, perhaps, with respect to their shape. This view was first proposed in a thorough-going fashion by Democritus, and received support in the 17th century

from the likes of Locke, Boyle and Newton. That these simple atoms were considered the stuff of material reality is plainly evidenced in Newton's creation story in Query 31 of the Opticks.

All these things being consider'd, it seems probable to me, that God in the Beginning form'd Matter in solid, massy, hard, impenetrable, movable Particles, of such Sizes and Figures, and with such other Properties, and in such Proportion to Space, as most conduced to the End for which he form'd them; and that these primitive Particles being Solids, are incomparably harder than any porous Bodies compounded of them; even so very hard, as never to wear or break in pieces; no ordinary Power being able to divide what God himself made one in the first Creation.

These ultimate particles of the atomic theory were modelled on the analogy of ordinary, observable objects: those properties which could be both universally and invariantly ascribed to macro-phenomena were by extension ascribed to the ultimate particles of the universe. The method of reasoning behind the atomic hypothesis is no where more clearly expressed than in the famous Third of the Rules of Reasoning, which appear at the Beginning of Book III of the Principia.

We no other way know the extension of bodies than by our senses, nor do these reach it in all bodies; but because we perceive extension in all that are sensible, and therefore we ascribe it universally to all others also. That abundance of bodies are hard, we learn by experience; and because the hardness of the whole arises from the hardness of the parts, we therefore justly infer the hardness of the undivided particles not only of the bodies we feel but of all others. That all bodies are impenetrable, we gather not from reason, but from sensation. The bodies which we handle we find impenetrable, and thence conclude impenetrability to be an universal property of all bodies whatsoever. That all bodies are movable, and endowed with certain powers (which we call inertia) of perse-

vering in their motion, or in their rest, we only infer from the like properties observed in the bodies which we have seen. The extension, hardness, impenetrability, mobility, and inertia of the whole, result from the extension, hardness, impenetrability, mobility, and inertia of the parts; and hence we conclude the least particles of all bodies to be also extended, and hard and impenetrable, and movable, and endowed with their proper inertia. And this is the foundation of all philosophy.

It follows from this characterization of matter that the only power proper to material bodies themselves is the power of inactivity: atomic particles can move and be moved, but do not contain any force or power whereby they may move themselves. The vis inertiae is for Newton a passive principle by which bodies persist in their motion or rest, receive motion in proportion to the force impressing itself on them, and resist motion in proportion to the forces of resistance which they meet. Clearly, on the basis of the principle of inertia alone no motion in the world would be possible; therefore some other principle must be hypothesized as responsible for putting bodies into motion, and some further principle is required to account for the maintenance (and so conservation) of motion. The need for this last principle derives from the fact, or so Newton believed, that the totality of motion in the world would eventually degenerate unless it was continually revived since there is a loss of motion in all inelastic collisions.

Let us put aside for the present the extra principles which the corpuscularian philosophy requires to put bodies into motion and preserve them in their motion, since its critics were concerned primarily with atoms themselves,

and with those properties which could be directly attributed to them. Moreover, we can class Descartes along with the atomists, since his theory of matter substantially overlaps the atomic theory with regard to the properties of basic particles. Descartes identifies bodily substance with spatial extension; consequently, wherever there is space for Descartes, there body must be as well. This and its theoretical converse, the rejection of the void, implies a plenum -- peas-in-a-pea-soup -- model of the universe. The only qualities which properly belong to bodies are shape, size, and motion, since only these qualities can be clearly and distinctly perceived as belonging to bodies. If the universe is a plenum, then it follows that the motion of any single luminous particle must result in a complete circle of bodies moving together: thus Descartes' vortex theory of motion. Remarkably, even with his theory of vortices, Descartes was able to correct the Galilean assumption which took circular motion as natural, and thereby to enunciate the principle of inertia before Newton. In his Principles of Philosophy (II, 37; 39) Descartes states: a) "Every reality, in so far as it is simple and undivided, always remains in the same condition so far as it can, and never changes except through external causes;" and b) "Any given piece of matter considered by itself tends to go on moving, not in an oblique path, but only in straight lines." Finally, notice that because only shape, size and motion can be attributed to matter as constitutive of it, Descartes, like Newton, requires principles whereby bodies may be

placed in motion and the quantity of motion in the universe preserved.

It was left to Leibniz to question the assumptions of the Cartesian and Newtonian philosophies of matter and expose them to philosophical scrutiny. The controlling insight which regulates Leibniz' attack and supports his theory is his distinction between substance and matter. If we are not compelled to recognize the identity of matter and substance then there is no compulsion to regard extension as a primitive attribute of substance. But if extension is not a primitive attribute of substance, then it must be ontologically derivative. Thus Leibniz to de Volder:

I do not think that substance is constituted by extension alone, since the concept of extension is incomplete. Nor do I think that extension can be conceived in itself, but I consider it an analyzable and relative concept, for it can be resolved into plurality, continuity, and co-existence or the existence of parts at one and the same time. Plurality is also contained in number, and continuity also in time and motion; coexistence really applies to extension only. But it would appear from this that something must always be assumed which is continuous or diffused, such as the white in milk, the color, ductibility, and weight in gold, and resistance in matter. For by itself, continuity (for extension is nothing but simultaneous continuity) no more constitutes substance than does multitude or number, where something is necessary to be numbered, repeated and continued. So I believe that our thinking is completed and ended in the concept of force rather than that of extension.<sup>20</sup>

Leibniz begins his argument by noting that the concept of extension cannot be the constituting concept of substance because it is an essentially incomplete or unsaturated concept: all extensions are the extensions of something, and therefore existents and extensions cannot be identical.

But this alone is inadequate: an atomist or Cartesian could reply that although bodies and extension were not identical concepts, nonetheless extension could be an essential attribute of bodies such that 'there is a body here' entails and is entailed by 'there is extension here'. Leibniz must therefore argue that not only is extension an incomplete concept, but it is also a "relative concept", which is to say, extension is a concept which cannot be attributed to individuals, but only to the relations which obtain between pluralities of individuals (substances), like those of coexistence and continuity. But continuity alone is insufficient to constitute substance because continuity presupposes that there is something which is continued and repeated; the somethings repeated and continued are entelechies or monads, and only these entities existing together and acting continuously will constitute an extended thing. Thus against the atomist Leibniz has the following, not altogether satisfactory, argument:

extended things must be continuous in the sense that all parts of extended things must likewise be extended; this division of extended things must be continuable to infinity or else body would lack continuity and thereby extension; therefore, there can be no smallest extended thing.

This argument is also effective against Descartes: all extension is ontologically derivative, and therefore all extended wholes, no matter how small, will be ideal and not real. Moreover, for Leibniz both the principle of inactivity (inertia) and the concept of motion, because proper to bodies alone and not substances, are ontologi-

cally derivative ("relative concepts"). A body's resistance to motion contains two factors: "impenetrability or anti-typy, and resistance or inertia. And since these two factors are everywhere equal in a body or are proportional to its extension, it is in them that I locate the nature of the passive principle or of matter, even as I recognize, in the active force which exerts itself in various ways through motion, the primitive entelechy... whose nature consists in a certain perpetual law of the same series of changes through which it runs unhindered."<sup>21</sup> The active principle of substance cannot be dispensed with for it is impossible that forces or actions should be modifications of essentially passive existents; therefore motion and secondary motive force must be ascribed to "secondary matter" or body. Thus for Leibniz all of the primary qualities the atomist ascribes to simple corpuscles can be derived from the relations of continuity and coexistence obtaining amongst pluralities of entelechies. Because these entelechies are essentially active, Leibniz can account for the 'forces' active in the world without having to go outside the basic substantial constituents of the world.

With all this, Leibniz' ontological reduction is not without some quiet flaws. Firstly, the atomist could claim for his theory the empirical advantage of being, at least potentially, falsifiable: we could fail in our microscopic searches to come up with anything even resembling atoms; but how could we positively discern the non-existence of monads in the world? Secondly, regarding

atomism as a potentially falsifiable theory, why should we grant Leibniz his presupposition of the principle of sufficient reason which he clearly requires to make good his argument that extended things must be divisible to infinity? Neither of these objections is severely damaging to Leibniz' position, but there is a third objection which gives the first two more weight. Leibniz' theory of force promises more than it delivers: the activity which constitutes the essence of substantial entities refers to no more than the endless stream of changing perceptions in each monad, and thus all force, in the sense of 'power', is drained from the universe. Hence Kant's reiterated criticism of Leibniz that monadic activity is not actual since monads are incapable of causal interaction, that is, of producing transeunt forces which 'bring about' changes in the states of entities outside the entity producing the force in question. In this light the brute impenetrability of atoms appears a more substantial force in the world, having the distinct advantage of being able to account for the 'thisness' of things.

In its classical form atomism is nonetheless not an acceptable hypothesis. One of Newton's concerns referred to the possibility of preserving the totality of motion in the world; he conjectured that in inelastic collisions motion would be lost, and that therefore an extra principle was required if the full amount of motion in the world was to be preserved. This quite naturally presupposes that on Newtonian principles inelastic collisions are at least possible; in fact, they are not. It is required for a

push to be given by one completely inelastic body to another such body that there be instantaneous acceleration and thus an infinite acceleration by one or both of the bodies in the collision; and infinite acceleration is possible only if there exist infinite forces; but infinite forces are inadmissible on Newtonian principles. In his Theoria Philosophiae Naturalis (1763), which Russell said presented the "true Leibnizian Dynamics", Boscovich offered a beautiful proof of this thesis.

Suppose there are two equal bodies, moving in the same straight line and in the same direction; and let the one that is in front have a degree of velocity represented by 6 and the one behind by a degree represented by 12. If the latter, that is the body that was behind, should ever reach with its velocity undiminished, and come into absolute contact with the former body which was in front, then in every case it would be necessary that, at every instant of time at which this contact happened the hindermost body should diminish its velocity and the foremost body increase its velocity, in each case by a sudden change...without any passage through the intermediate degrees... For it cannot possibly happen that this kind of change is made by intermediate stages in some finite part, however small, of continuous time, whilst the bodies remain in contact. For if at any time the one body had 7 degrees of velocity, the other would still retain 11 degrees, thus during the whole time that has passed since the beginning of contact when the velocities were respectively 12 and 6, until the time at which they are 11, and 7, the second body must be moved with a greater velocity than the first; hence it must traverse a greater distance in space than the other. It follows that the front surface of the second body must have passed beyond the back surface of the first body; and therefore some part of the body that follows behind must be penetrated by some part of the body that is in front. Now, on account of impenetrability, which all Physicists in all quarters recognize in matter, and which can be easily proved to be rightly attributed to it, this cannot possibly happen. There really must be, in the commencement of contact, in that indivisible instant of time which is an indivisible limit between the continuous time that preceded the contact and that subsequent to it...a change of velocity taking

place suddenly, without any passage through intermediate stages; and this violates the Law of Continuity, which absolutely denies the possibility of a passage from one magnitude to another without passing through intermediate states.<sup>22</sup>

Granting the notion of infinite forces is untenable, and assuming a proof against the idea of discontinuous action can be provided, it follows that atomic particles must be ruled out as being the ultimate constituents of matter.

17. Like Boscovich, Kant claims causation by contact of atomic bodies to be theoretically unacceptable, and offers a demonstration to that effect similar to Boscovich's (MFNS, pp. 551-3). Unlike Boscovich, who thought attractive and repulsive forces radiated from point centers of influence in space, Kant believes the infinite divisibility of space entails the infinite divisibility of matter, and therefore that the infinitely small 'substances' normally postulated as 'responsible' for attractive and repulsive forces are nowhere to be found 'in' space. In this Kant takes himself to be following the true teaching of Leibniz on space, substance and matter: matter is not a composite of monadic simples, simples are not proper 'parts' of matter, but the non-sensible "and to us fully unknown ground of the appearance which we name matter (which may be a simple being even if the matter which constitutes the appearance is composite) (OAD, p. 203)." The composite of things in themselves would certainly be made up of simples, but such is not the case for appearances. Kant, then, accepts Leibniz' argument for the continuity of extended matter: "the

composite in the appearance does not consist of the simple, because in the appearance, which can never be given otherwise than as composite (extended), the parts can be given only through division and thus not before the composite but only in it. Therefore, it was not Leibniz' intention, as far as I comprehend, to explain space by the order of simple entities side by side, but rather to juxtapose this order as corresponding to space while yet belonging to a merely intelligible (for us unknown) world (MFNS, p. 508)." Although I am not convinced this is the view which Leibniz held to throughout his career, it does seem to be the position of his later dynamical writings, and was the view we attributed to him on the basis of the quoted passages from his letters to de Volder. Whether Kant is entitled to such a view on the basis of his own theory is a more problematic matter.

If collisions between inelastic bodies is physically impossible on Newtonian principles, then the logical step to take in order to preserve Newton's theory is to deny that bodies are composed of inelastic parts. Correlatively, if bodies cannot be composed of inelastic parts, then their impenetrability cannot be absolute. Matter, Kant hypothesizes, fills space by the repulsive force of its parts; because the power to fill space must be relative rather than absolute, he takes it that these forces will in all cases possess some determinate degree greater than zero and less than infinity (MFNS, p. 499). This is sufficient to establish the original elasticity of all matter and side-step thereby the problem of inelastic

collisions. Employing this model Kant can argue that although one matter can compress another matter to infinity, one matter cannot completely penetrate another matter in the sense of completely abolishing the space of the latter: the original elasticity of matter entails that complete penetration would require the existence of infinite forces, and such forces we know to be impossible. In this way Kant turns to his advantage the postulate against the existence of infinite forces; he explains the ability of matter to fill space in terms of relative repulsing forces, and then by employing the postulate against infinite forces demonstrates this to be adequate to explain the impossibility of one body passing beyond the back surface of another body, as in Boscovich's demonstration. And this unquestionably seems to be more in keeping with the structure of Newtonian dynamics than the postulation of impenetrable atoms. In general, Kant considers the attribution of absolute impenetrability to matter as a primitive quality an unjustified and unnecessary practice, and the postulation of a fundamental repulsive force more rational and defensible.

Absolute impenetrability is indeed nothing more or less than a qualitas occulta. For one asks, what is the reason why matter cannot penetrate one another in their motion? He receives the answer, because they are impenetrable. The appeal to repulsive force is free of this reproach. For although this force likewise cannot be explicated according to its possibility and must hence be admitted as a fundamental one, it nevertheless yields the concept of an active cause and of the laws of this cause in accordance with the effect, namely, the resistance in the filled space, can be estimated according to the degrees of this effect. (MFNS, p. 502)

Kant's last point here is that if we treat impenetrability as absolute and primitive it becomes inaccessible to quantitative treatment; because forces have a degree we can measure their various repulsive powers in comparison to one another. Thus the dynamical stuff of the world, although primitive or fundamental in the sense that its 'possibility' cannot be known or demonstrated -- just because it is fundamental one would suppose -- is nonetheless accessible to quantitative evaluation, and in this way a legitimate, cognizable part of our scientific ontology. Finally, because fundamental repulsive forces have these various characteristics, they fulfill the demands for the treatment of the "real in perception" given in the *Anticipations of Perception*. We shall return to this point later.

From the postulation of a fundamental force of repulsion alone, by which the impenetrability and solidity of things is accounted for, a theory of material bodies cannot be constructed: if only repulsive forces existed, and there existed no quality of space to limit the manifestation of this force, then all the parts of this force would repulse and disperse one another to infinity; none would be held within any limits of extension and no "assignable quantity of matter would be found in any assignable space. Consequently, with merely repulsive forces of matter, all space would be empty; and hence strictly speaking, there would be no matter at all (MFNS, p. 509)." Although we do not possess for attractive forces the same sort of immediate sensory evidence as we

possess for repulsive forces, attraction (gravitational forces) must nonetheless be accorded a place as a fundamental force. An ordinary 'solid' body will be a collection of attractive and repulsive forces in which the repulsive force of the aggregate is greater than its attractive force; hence the ability of the aggregate to resist penetration by other solid bodies. We can designate as the surface of a body that 'point' where the actual nett force amongst the members of the aggregate equals zero. For this to be plausible we must postulate that the repulsive force of a body will have a larger absolute value near the center of the body than will the body's attractive force, but falls off more rapidly as it approaches the body's surface, where the two forces, again, must be equal and in balance. All this is very rough and quite idealized, but provided enough of the detail for this story can be supplied<sup>23</sup>, at least the primary qualities of hardness, impenetrability and extension should be able to be accounted for in terms of attractive and repulsive forces.

While the general outline of Kant's position is not at all implausible, and indeed seems decidedly superior to any of the other theories we have briefly looked at, one of its significant details fails to carry conviction. There exists a crucial asymmetry between Kant's account of repulsive forces on the one hand, and his account of attractive forces on the other.<sup>24</sup> Repulsive forces act by contact, and thus necessarily only where they are and not where they are not: if a repulsive forces acts on a

distant matter it can only be by means of some matter which lies between it and that distant matter. In contradistinction to this, attractive or gravitational forces can act without a medium and thus at a distance, as if through empty space -- "as if" because space must be filled to some degree with repulsive forces in all places. Attractive forces must then differ in status from repulsive forces: repulsive forces are subject to the antinomy of the infinite divisibility of matter, but Kant nowhere subjects attractive forces to the natural antinomy of continuous action versus action at a distance. Because he nowhere even suggests this antinomy, Kant must consider gravitational action at a distance as an a priori truth of the metaphysics of matter in a way which is more fundamental than that of repulsive forces. Indeed Kant speaks of action at a distance in such a fashion as to imply that the concept of continuous action comes close to being a non sequitur: "one can say...that everything in space acts on another only in a place where the acting thing is not. For if the thing should act in the same place where it is itself, then the thing upon which it acts would not be outside it; for 'outside' means presence in a place where the other thing is not (MFNS, p. 513)." Kant does not think that attraction should be limited to contact because the existence of attractive forces is a condition for the possibility of material bodies, and therefore prior to the possibility of contact. But this conceptual priority will not suffice for Kant's argument: all that is required for the possibility of bodies is that

there be attractive forces 'within' a body in order to prevent its repulsive forces from dispersing to infinity; it cannot be concluded from this that attractive forces do not act continuously. On the contrary, it can be argued that continuous action through a medium (Kant himself adopted an ether theory in his writings after MFNS) provides an a priori simpler model of causal influence than does the model of action at a distance, and this in such a way as to not prejudge the question between repulsive and attractive forces.<sup>25</sup> Suppose there exist two spatially separated bodies or point atoms A and B, and A moves suddenly with respect to B. Eventually as a result of the motion of A, B will experience a change in motion. We cannot hypothesize that B will move simultaneously with respect to A, since that would require the inadmissible assumption that a change in the force field surrounding A and B could be transmitted at an infinite speed. Alternatively, if the velocity of the transmission of the change in the field is finite, then the energy and momentum of the point atom will be given up to surrounding space. But this requires the adoption of a field theory, for we could not plot the initial conditions of a system by specifying the momenta of all the point atoms of the system alone, for this would leave unspecified the actual relations holding between the point atoms; therefore we need to specify as well the momentum present at each point in space.

Since Kant himself demands that all space be filled, it does not seem inappropriate to convert his metaphysics

of matter into a proper field theory. Moreover, this conversion saves Kant's theory from a potential contradiction. His theory requires attractive forces in order to prevent the repulsive forces of bodies from dispersing, but from his argument that it is attractive forces which first make contact between bodies possible he believes he is free to argue that gravitational action acts independently "of the filling of space between moving thing and thing moved, i.e., such action must take place without the space between moving thing and the thing moved being filled, and hence takes place through empty space (MFNS, p. 512)." But, firstly, Kant denies the existence of empty space (MFNS, p. 524 ff.) and it is no good arguing that it is repulsive forces which fill space, since it is gravitational forces being considered here as acting irrespective of repulsive forces; hence the existence of the void would be needed in order to account for the possibility of their action. Which leads to the second and more decisive point: if gravitational action functions irrespective of repulsive forces (MFNS, p. 516), then how can their interaction with repulsive forces explain the possibility of material bodies? Kant is not unaware of this problem, and attempts to side-step it with a notable bit of obfuscation. "When cohesion is explained as the reciprocal attraction of matter insofar as this attraction is limited solely to the condition of contact, then such cohesion does not belong to the possibility of matter in general and cannot therefore be cognized a priori as bound up with matter. This property would hence not be meta-

physical but physical, and therefore would not belong to our present considerations (MPNS, p. 518)." But this begs the question at issue: the point is not about cohesion in general, and thus about particular cohesive forces, but relates to the possibility of a body having definite boundaries, and so being clearly definable with respect to other bodies; and this requires both internal (repulsive) and external (gravitational) forces to be 'within' the body. If Kant's theory is not explaining this possibility, then what is its point? How can gravitational forces 'within' a body prevent its repulsive forces from dispersing if the gravitational forces are not in continuous and immediate contact with the repulsive forces? To put the same point differently: how could either a repulsive or an attractive force manifest itself if its opposite did not exist? If Kant, like Leibniz, is to give an account of matter in terms <sup>of</sup> substance (forces), he is obliged to answer this question.

The point of Kant's discussion of gravitational forces was to make conceivable or intelligible Newton's gravitational laws, and this at a time when while the inductive strength of Newton's theory was nowhere questioned because of its explanatory successes, the intelligibility of the theory was not generally questioned either, not because it was particularly intelligible but because it was inductively successful. Thus the intelligibility of the theory had come to be firmly separated out from its 'truth'. So we find Locke writing to Stillingfleet: "I have been convinced by the judicious

Mr. Newton's incomparable book...that the gravitation of matter towards matter in ways inconceivable to me is not only a demonstration that God...can put into bodies powers and modes of acting beyond what can be derived from our idea of body or explained by what we know of matter: but it is furthermore an incontestable instance that he really does so."<sup>26</sup> Kant 'judiciously' creates the conceivability of gravitational forces by making them integral to "our idea of body". It has been no part of my intention to question the propriety of this move of Kant's. Later we shall have to examine more carefully the nature of Kant's metaphysical demonstrations; there are certain difficulties which arise with Kant's program from the development of micro theories which deal explicitly and inductively with part of what Kant treated metaphysically in terms of intelligibility; though, to be sure, all questions of intelligibility do not get swept aside by the move to micro-theoretical interpretations of the universe. Here we have meant only to challenge Kant's asymmetrical treatment of repulsive and gravitational forces. Kant's theory of matter, we have been suggesting, on the grounds of a priori rational conceivability, should have taken continuous action as ultimate. The question now to be asked is whether the argument for the infinite divisibility of matter (the antinomy of simplicity) gives us any reason to doubt the possibility that Kant's fundamental forces could be the 'real' and 'final' constituents -- stuff -- of the physical universe. We shall not be asking the inductive question as to whether force could

(empirically) be the stuff of the universe, but the philosophical question as to whether anything like forces could function as the stuff of the universe, which is to say, we are interested in the general problem of whether experience could have discoverable ultimates, since it is this which Kant's arguments tend to challenge.

18. The point of the Second Antinomy is to show that in experience no unconditioned matter (body or substance) can be met with, demonstrating indirectly thereby the matter of experience to be mere appearance. Substance in the field of appearance, Kant informs us, "is not an absolute subject, but only an abiding image of sensibility; it is nothing at all save an intuition, in which unconditionedness is never to be met with (A 526 = 554)." From the argument: i) the world is composed of simples; and ii) the world with respect to its matter is infinitely divisible, are both defensible positions, it does not follow that neither contention can be discovered to be empirically true, although if Kant's argument were correct it would follow neither could be proved to be true a priori to the exclusion of the other. Would this be adequate to Kant's purposes?

It seems a sound hypothesis from the previous quote, and on the basis of earlier quotes from OAD and MFNS where Kant condones what he regards as the true Leibnizian position (viz., simple substances are not parts proper of bodies, and while bodies are ideal aggregates of infinitely many non-sensible entities, space is not a function of these non-sensible entities in their relative order, but

rather a function of bodies formed from non-sensible entities continuously coexisting, and therefore a doubly relative or relational concept) that in the Second Antinomy, Kant's negative conclusion is meant to serve the theoretical purpose of grounding the ontological possibility, and probably for him the necessity, of there being unconditioned simple entities which cannot be found or even sought after in space itself. What I am suggesting, then, is that the Second Antinomy makes more sense if we suppose Kant has an ontological thesis which his argument there serves, or is meant to serve, to protect.<sup>27</sup> Such an hypothesis cannot explain Kant's arguments themselves, but it can explain the point of his arguing as he does. In the present circumstances this turns out to be of some importance. It is evident from our capsule formulations of the Newtonian and Leibnizian theories of matter that the thesis of the Second Antinomy represents the Newtonian position (matter is composed of inelastic atoms), and the antithesis the Leibnizian position (composite things are infinitely decomposable, and nowhere 'in' the spatial world does there exist simple entities). How both Kemp Smith and Weldon were led so far astray as to suggest that the thesis represents the Leibnizian rationalist cosmology, and the antithesis the empiricist counter is obscure.<sup>28</sup> At B 469-70 of the thesis Kant says he is only dealing with simples in so far as they are given in a composite which can be resolved into simples, and this is not to be confused with the Leibnizian contention that there exist simples which can be given only immediately, as for

example in self-consciousness, but not as elements or members of a composite strictly speaking. When a simple is a member of a composite it should be called an "atomus": a Newtonian atom. Since we have already seen Kant interpret Leibniz as holding that simples are non-sensible there is no reason to think his distinctly odd decision to call the thesis of the Antinomy "the principle of monadology" ~~which~~ means he regards it as representing Leibniz' position, especially since he explicitly denies he is doing so. Now Kant's argument in the Second Antinomy would be of some interest if he had intended only to say that neither the Newtonian nor the Leibnizian theories of simples could be dogmatically established, and therefore we must adopt a wait-and-see attitude, and see what scientific advance produces. But even as an indirect argument this would offer no support to transcendental idealism, because it does not confirm either position as necessarily impossible: if both are possible, one of them could be empirically true; if atomism were empirically true there would be unconditioned, simple elements in the world. Therefore it is not sufficient to present thesis and anti-thesis as only historical positions which are equally rationally defensible, and hence both unjustifiably dogmatic. Kant must argue that there is a necessary and ineliminable conflict of reason here, which is incapable of being decided either rationally or empirically. Only then would his argument have a point: because the world of experience is one of mere appearance and not of things in themselves the antinomy cannot be resolved; if irre-

solvable then we shall not at any time be able to discover any unconditioned elements in experience, i.e., if we did discover what appeared to be the basic 'atoms' of experience we would have to assume they were further divisible ad infinitum and thus not basic at all. A failure on Kant's part to make good the argument of the antinomy would imply that transcendental idealism is not necessarily true, at least with respect to the matter of experience.

19. If the antinomy of simplicity is illegitimate, we should expect Kant's arguments for thesis and antithesis to be question-begging. Let us see. The thesis of the antinomy reads: all the composite bodies in the world are made up of simple parts, and therefore nothing exists but what is simple or is composed of simples. To prove this, assume the opposite: if no simples existed, and all composition were removed from a complex body, then no composition and no simple parts would remain, which is to say, nothing at all would remain. Kant attempts to tighten this argument by adding: to assume composition may be removed from a body assumes there are simples; if the compositeness of an entity were not removable, then the composite in question would not be made up of substances. Necessarily, composition as applied to substances is an accidental relation, apart from which they must be able to subsist. Kant's definitional addenda to his reductio argument show the argument as a whole commits a *petitio principii*: if to be a substance is to be an unconditioned, self-subsisting simple, then any substantial composition will be of simples, and all removal of compo-

sition will leave only simples. This lends some support to my contentions concerning Kant's presupposed position on substances, and follows his general procedure in ID. He takes it as definitional in ID: i) for a composite there must be a manifold of parts; ii) for a whole there must be an 'allness' of parts (ID:✕ 1). Kant then goes on to offer the perfect counter to his position in the thesis of the Antinomy: "it is wrong to attribute the series of successive things, I mean states, to the world whole as a part. For modifications are not parts of a subject, but are grounded determinations (ID:✕ 2)." Why cannot the material world -- at one time -- form a whole in which 'individual' things (and their states) are taken to be determinate states of the whole? In general, it is not unreasonable to suppose the world whole is a complex composite containing no independently simple parts. Indeed, such a view is precisely what is assumed in proposing a field theory, and, more significantly, is also the view to which Kant's arguments in the First and Third Analogies lead. It is also the view to which Kant's two force construction of matter leads: there must be both gravitational and repulsive forces in the universe, but neither force can be considered as self-subsistent since they must depend on one another for the possibility of making themselves manifest. As we have already seen, Kant wishes to deny this conclusion; but it is difficult to comprehend how, if neither force can manifest itself in the absence of the other, they could be independently acting substances. In this light Kant's two force construction of

matter turns out to be the ideal counter-example to the logic of 'composites and their parts': the 'simples' from which composite things are made are interacting repulsive and attractive forces, neither of which can be accounted for in terms of the other.

The results of Kant's defense of the thesis of the Antinomy can be regarded as at best inconclusive. However, if we regard the point of the Second Antinomy to establish that no unconditioned elements are to be found in experience, then the failure of thesis is irrelevant: either the thesis is simply false or, if the antithesis is true, then even if the thesis were true it would be challenged by the antithesis, and hence shown to be an illusion of reason (reading the thesis dogmatically). This indicates a clear asymmetry between the First and Second Antinomies. Kant can only establish the transcendental ideality of space and time if both thesis and antithesis of the First Antinomy are true (if then); but he can demonstrate the conditionedness of matter simply by showing the antithesis of the Second Antinomy to be true. As we have already seen, Kant has various objections, besides the infinite divisibility of matter, against atomism; but he has only the argument for the infinite divisibility of matter to employ against a dogmatic construal of his own force theory of matter.

The antithesis reads: no composite thing in the world is made up of simples, and nowhere in the world are simple substances to be found. Again Kant looks for a reductio argument to make his point. The argument he

actually employs, however, is a straightforward deduction from his theories of space and perception. What is composite must be space-occupying since all composition is possible only in space; therefore the parts of composites must themselves be space-occupying, and everything which occupies space is extended and composite; thus there can be no composite that is made up of simple parts. Roughly, then, if a part of a thing were simple it would not be spatial, and if non-spatial then incognizable. Kant thinks it follows from this that, accepting the infinite divisibility of matter, if matter were made of simples those simples would have to be mathematical points, and he denies, even if physical, such points could through mere aggregation fill space (B 468 of the antithesis). Hence the Leibnizian conclusion that absolute simples are not parts proper of material wholes. These arguments contain two unproved premisses. Firstly, it cannot be assumed that whatever is extended is non-simple, since the 'conceivability' of further division does not imply its real possibility. The attempt to divide an extended but simple atom might result in: a) nothing happening: no matter what we do the atom remains absolutely impenetrable; b) its annihilation; c) its turning into something diffuse and indefinite like pure energy; and how could one 'divide' something like energy? (The difference between dividing 'stuff' as opposed to 'thing-like' entities will be taken up in a moment). With Kant, I would regard all but c as extremely vulgar, but not for all that unintelligible. Even b, despite the reading of

the First Analogy which takes it to say, 'nothing can go clean out of existence', is plausible since entropic laws entail the quantitative depreciation of the energy level of the universe as a whole, and if the 'stuff' of the universe is energy, then the stuff of the universe is continually going clean out of existence. As for a, all I can say is that particle physics is nothing if not prolific.

Secondly, although Kant is probably correct in thinking it absurd that physico-mathematical points could fill space through mere aggregation, he is unjustified in his assumption that unextended points, having or being nothing more than positions in space, could not fill space by radiating a repulsive force. Because this position approximates his own theory of matter in MFNS, Kant was anxious to deny it.

By the proof of the infinite divisibility of space, that of matter has not by a long way been proved, if one has not previously shown that in every part of space there is material substance, i.e., that parts movable of themselves are to be found. For if a monadist might want to assume that matter consists of physical points each of which (for this reason) has no movable parts but yet fills a space by mere repulsive force, he would be able to grant that this space, but not the substance acting in it, is at the same time divided, and hence that the sphere of the substance's activity is divided, but not that the active movable subject itself is at the same time divided by the division of space. Accordingly, he would compound matter from physically indivisible parts and yet allow it to occupy space in a dynamical way.  
(MFNS, p. 504)

This passage combines insight and confusion. Kant's insight is to question the function of 'points' in point centers of influence: are they forces themselves or just

the origin of forces? if just the origin of forces, what distinguishes them from the forces they radiate? and what is the true 'substance' of things, the 'points' or their forces? etc. For the moment, let us put these queries aside. The more immediate question is whether the infinite divisibility of space entails the infinite divisibility of matter, or, rather, does the infinite divisibility of matter entail the conditionedness of matter? In his analysis Kant attempted to supply impenetrability with a physical and dynamical basis, as opposed to what he called a mathematical -- because absolute -- basis. On the atomic hypothesis the parts of a whole are of the same nature as the whole and are the unconditioned elements of it; on the dynamic hypothesis impenetrability is relative to the density of a repulsive force in a given portion of space, and therefore the substance of the world is a continuous field of repulsive (and attractive) forces. Now from the continuousness of forces in space their infinite divisibility follows, but not their conditionedness: in the only relevant sense of 'simple', forces are simple since: a) they are not compounded out of any other substances; and b) every point in space will have some pure 'power', either attractive or repulsive. Unconditionedness relates only to ontological autonomy, and since forces are pure powers requiring nothing else for their existence they are, ipso facto, unconditioned. Again, notice the comparison with atoms: extension is a primitive quality of atomic bodies, but it is only a derivative quality with respect to forces, and therefore the divisibility of

forces cannot count against them, since it does not effect any essential quality of them. Roughly, Kant seems not to have realized the implications of his compounding of matter from substance. In contemporary parlance, substance (= force) for Kant is a mass-term and matter a count-term. The divisibility argument only makes sense if the world is composed of strictly countable items whose parts are also countable items; but Kant has already shown this world to be (because pre-dynamical) impossible. This implies that the division of a field is not 'réal' or 'physical', since, by hypothesis, no countable items are uncovered through this process of division.<sup>29</sup>

In discovering or postulating repulsive and gravitational forces as fundamental it seems fair to suggest that Kant has already in his grasp what well could be -- in a philosophically idealized mode -- the unconditioned 'simples' of the material world. What reason is there not to regard these two forces as continuously simple and unconditioned? Kant too much assumed that there could not be mundane, unconditioned entities because he could not see how an unconditioned entity or substance could be conditioned by anything else whatsoever (where the paradigm of substance is thought of as a countable item); but in making these assumptions Kant conflated not only different senses of 'substance', but different senses of 'unconditioned' as well. My free willing, for example, is unconditioned by any previous causal states, but not unconditioned absolutely; it is minimally conditioned by the moral law: my freedom could never become manifest or realized in the absence of any structures or constraints.

But because I must obey the moral law in order to be free does not imply that my powers of spontaneity are one whit less spontaneous and unconditioned than they in fact are. Similarly, a point center of influence is unconditioned by any further causes vertically, i.e. there is no further something 'below' or 'beneath' the point center propping it up and maintaining it in its being: it is. In order to manifest itself, however, there must be 'horizontal' constraints upon it, that is, other point centers of influence around it which condition it, preventing it from dispersing itself to infinity. I am not quite sure how to express this difference between the vertical and horizontal order of things. Perhaps it is that fundamental forces are ontologically unconditioned, but matter-of-factly conditioned in their (structured) relations with one another. At any rate, no one would deny, for example, the Divine Creator His creativity just because He required mundane creatures in order to make His creative powers manifest. Just as there exist real relations between creator and creature, so there can exist relations (connections) between unconditioned and unconditioned. Kant's monadist, then, though perhaps confused, can in a more liberal light be seen to be not altogether wrong. The monadist could reply to Kant that in dividing a space Kant was only dividing the sphere of activity of its point center. He (the monadist) is not committed to saying he is compounding matter from indivisible parts and yet allowing it to fill space in a dynamical way: matter is nothing but a compound of forces, but they are discrim-

inable in such a way that we can identify different positions in space from which different force fields appear to radiate. Kant gives no good reason for thinking each sub-region of a field must be taken as 'ultimately' autonomous, that is, for treating forces as continuously countable items rather than a continuous stuff. The point centers themselves may or may not be the 'source' of the force fields they generate, but there is nothing implausible in the suggestion they are such sources, since the only difference between a point and its field could be one of 'intensity' (degree of power).

Finally, it is worth pointing out Kant does confuse the possibility of perceiving X with the possibility of knowing X; and in the present context this amounts to, once more, the presupposition of the standpoint of material idealism. As we saw earlier, Kant accepts as vindication for his position the fact that "parts can be given only through division, and thus not before the composite but only in it (MFNS, p. 508)." Therefore simple parts, because not composite or complex, cannot be reached through division. It helps to read this argument psychologically, that is, as saying that nothing absolutely simple is manifold enough to be synthesizable and hence cognizable, and therefore the complex parts of synthetic wholes when analyzed will not be simple. The question at issue, of course, is whether simples are cognizable, not whether they are immediately perceptible; and on this question, which is the only legitimate one Kant can raise (see OAD, pp. 199-210), he has by no means proved his point.<sup>30</sup>

20. Kant says "all natural philosophy consists in the reduction of given forces apparently diverse to a smaller number of forces and powers sufficient for the explication of the former. But this reduction continues only to fundamental forces, beyond which our reason cannot go (MFNS, p. 534)." This passage has a striking parallel with a passage quoted earlier: "But human insight is at an end as soon as we arrive at fundamental powers or faculties, for their possibility can in no way be understood and should not be arbitrarily imagined or assumed (CPrR, pp. 47-8)." I earlier argued that the postulation of spontaneity to the self was required as an ontological ground for the possibility of freedom and rationality. If spontaneity is the ontological foundation of freedom and rationality, and whatever other powers we might possess, then we need not trouble ourselves over its 'possibility': it is spontaneous because unconditioned, if unconditioned then ontologically ultimate. First principles, in either the formal or the material modes, play the part of unexplained explainers; whether there are any first principles whose credentials are impeccable is matter for dispute; also it is a matter for dispute as to whether any first principles are built into the structure of the universe, be it the universe of things or the universe of men. It could be that all first principles are conventional, their functional utility in organizing various realms of discourse the whole of their being. Perhaps a future generation of men will come to the conclusion that there are no first principles in the universe

and they will discover a mode of discourse which does not depend on the employment of first principles. In saying this I am only attempting to indicate that there is a problem about first principles (in general), and that there is a point to the old dispute between poetry and philosophy; but it is not these concerns which Kant's worries about the 'possibility' of fundamental powers or forces relate to. Kant's warning that the fundamental powers of the mind cannot be understood, and his parallel stricture against attempting to a priori comprehend the possibility of fundamental forces simply indicate his belief that there is more to comprehend than such fundamental forces or powers, that there is something else in the universe which explains them and sustains them in their being, another point of view from which they can be considered, although not by us (as wholly spiritual, for instance); but thus far we have discovered no compulsive reasons for following him in those beliefs. If the spontaneity of the self and the fundamental forces of the universe are ontologically ultimate, then they are unexplained explainers, not only in the order of reason but in the order of being as well (above all).

For the possibility of experience to possess immanent unconditioned elements or structures, or to have an unconditioned ground, or to be an unconditioned whole there must exist elements -- force fields or point centers of influence -- which can be described solely in terms of the permanent power or powers they possess. Force fields, like point centers of influence, are identical with the

powers they possess although we describe such fields in dispositional terms: the state of a field is wholly determined when for each point in space we can specify a vector which determines the direction and strength of the force that a particle of unit charge would experience if it were at that point.<sup>31</sup> No force, needless to say, is fundamental if it can be generated through the 'composition' of other forces. Accordingly, we can never know for certain that whatever ultimate theory we come up with explains phenomena strictly in terms of fundamental forces; there may always be powers more fundamental than those we assign to elementary point centers or to the field. That, however, is only a verificationist limitation; it does not deny that a complete science is possible, or that, from the perspective of the ideals for a complete science specified earlier in the theory of systematic unity, we are never justified in believing our science is complete. The more pressing question is: how can we reasonably specify the unconditioned elements of experience as opposed to the conditioned? What cognitively differentiates conditioned from unconditioned entities?

A significant hint is offered by Kant: matter in its dynamical aspect is a composition of forces, and forces are nothing but intensive magnitudes. The construction of bodies from point centers of influence in the *Metaphysical Foundations of Dynamics* fulfills the variable specification for the real in perception being an intensive magnitude as called for in the *Anticipations of Perception*. Now if the *Axioms of Intuition* lay down

the form of matter with respect to its spatial relations, and the Analogies of Experience determine the forms of temporal relation which must hold amongst objects and events (and these must comply as well with the requirements of the Axioms), then the characterization of matter in its dynamical aspect should make no essential reference to or depend upon in any way for its existential characterization the existence of space and time: an intensive magnitude is a measure the degree of which is not related directly to any spatiotemporal measure (qua spatiotemporal). To be sure, force fields are spatially distributed potentials which can be dispositionally described, and they endure or change through time. But this does not imply that space and time are 'prior' (existentially) to the field. If we drop here, as we shall need to do anyway, Kant's contention that space and time are solely subjectively imposed clamps on entities which are not only not essentially non-spatial and non-temporal, but which, more importantly, have a being above and beyond that which they manifest in spatiotemporal ways, and provisionally accept a (nearly) relational conception of space and time, then it follows that while it is necessary to the concept of a field that it have spatial and temporal characteristics, it is the field which is necessary for the existence of space and time. Space and time are, for Kant, extensive magnitudes, since all parts of them are also and always spaces and times. If nothing else existed but space and time (or spaces and times) then we would have only pure intuitions of spatiotemporal mani-

folds but not empirical manifolds; there would be no matter of experience.

Now primary qualities all involve in some direct manner extensive magnitudes: shape, size, extension, mobility are determinable qualities of body all directly relating to spatial and temporal characteristics or configurations. Secondary qualities -- color, smell, taste, etc., -- as relative to our senses depend directly on space and time as our forms of intuition, that is, they must be displayed along extensive magnitudes if they are to appear to our senses; in a sense, as secondary qualities their being is in their being perceived, and the forms of our perceiving are spatial and temporal. There are no point instants of either primary or secondary qualities. The only difficult case is that of solidity: is it an extensive magnitude? Locke has this to say on solidity: "This is the idea which belongs to body, whereby we conceive it to fill space (E: II, iv, 2)." And later we find him saying: "Sensation convinces us that there are solid, extended substances; and reflection, that there are thinking ones (E: II, xxiii, 29)." Locke's notion of solidity corresponds to Kant's conception of the real in perception, the somewhat or stuff of the world; and Locke espouses as well the same Cartesian ontology which we have seen to underlie Kant's philosophy, although Kant would really prefer his 'substances' to be more spiritual. The important point in all this is that solidity is not a primary quality like other primary qualities, if it is one at all (it could be the quintessential secondary quality), because what is solid is just that which has

some intensive degree, and all other qualities are extensive magnitudes of one sort or another. If we are to grant Kant's ontological reduction, intensive magnitudes are ontologically non-derivative while all primary qualities are ontologically dependent; if we grant the traditional scientific ontology, secondary qualities can be accounted for in terms of primary qualities. Again, one could not have only primary qualities in one's ontology (solidity apart), for then the question arises as to 'what' it is that 'has' extension, shape, figure and moves. Solidity might be a secondary quality, but we should then need to say that it differs from all other such qualities in that it does not depend for its being upon being displayed along spatiotemporal matrices. If forces are intensive magnitudes, then this would seem to uniquely characterize them since all conditioned kinds require some form of spatiotemporal spread for their being. Consequently, a scientific theory which deals with the unconditioned must be given strictly in terms of the spatiotemporal relations of intensive magnitudes; no non-spatiotemporal terms of such theories may make use of extensive magnitudes, that is either primary or secondary qualities. Roughly, where 'p' = 'place', 't' = 'time', 'ø' = 'the real in perception', and 'd' = 'ø's degree', we should get the following basic formula: 'It ø's d, p, t', as a model of a statement referring to the unconditioned alone.<sup>32</sup> In order to capture the relational qualities of forces we would have to make 'd' part of a vector with some specific direction.

The categorial nature of ø will be clarified when we

come to discuss the Anticipations of Perception.

21. Our analysis paradoxically confirms one of Kant's intuitions: the unconditioned is not of itself a spatio-temporal being: it fills space -- without it there would be only a vacuum -- and it endures -- without it there would be no things or events, and hence no change -- but unlike shape, size or motion it is not spatial, and unlike change or motion it is not temporal. It is, and since nothing else is unless it is, it is unconditioned, and hence a necessary being. It is knowledge of it which science must seek after.

Part Two

Science, Realism and Essentialism

## From Judgment to Science

1. The burden of Part One of this essay was to shift the onus of proof onto the defenders of the Kantian-empiricist theory of knowledge by depriving them of the legitimacy of an ameliorated reading of Kant's text, that is, a reading which excises the theory of transcendental idealism from its central place in Kant's system. Such an anti-essentialist theory of knowledge may be true, but it is no good pointing to Kant's text to show that it is. If anything, the critical-historical argument of Part One showed that Kant assumed that either the metaphysics of transcendental idealism is true or essentialism is true (although no knowledge in accordance with essences is possible).

Now it is equally useless for the essentialist to point to Kant's text for vindication since Kant nowhere argues for essentialism, but rather seeks ways of explaining (the possibility of) objectivity without explicitly drawing on and employing the resources of an essentialist framework. In what follows I will be exploring in a philosophical way some of the arguments which give essentialism *prima facie* plausibility. In this chapter I will be examining some of the broad issues surrounding the problem of objective validity. In Section A, employing Kant's schematism theory as my starting point, I ask after the necessary conditions for establishing the objective validity of a concept or category. Establishing the objective validity of a concept or category, I argue,

is an empirical matter, requiring recourse to scientific theory. The sort of scientific theory required here is basically of the Lockean, real essence variety. This argument receives some support from Section B where the primacy of natural necessity against all other varieties of necessity is defended. Further aspects of an essentialist ontology will be defended in my final chapter when we come to examine Kant's famous arguments in the Pure Principles of the Understanding.

#### A. Essentialism, Semantics and Ontology

2. The pure categories of the understanding as the logical functions of judgment supply the logical grammar of our epistemological system. In order for these categories to be of use a connection between them and perceptual items must be discovered. The Schematism provides a set of referential rules linking concepts to perception<sup>1</sup>, and by extension (what is nearly the same thing) a set of conditions for the application of concepts to perception. Referential rules have application to experience because experience has a particular empirical form, and therefore meets certain conditions for the application of concepts to it. However, if we have no a priori insight into the empirical form of experience, as I have argued we do not, and therefore into the conditions which allow for the application of different types of conceptual items to experience, then we are left with a set of referential rules which are grounded on only putatively necessary conditions for possible experience. But because these rules do, as far as we can tell, set

the limits to our understanding of what nature must be like (its empirical form) then we must take these rules or concepts as forming a normative structure, a system of ought-to-be's by which we can and must respond to and order perceptual items if we are to have objectively valid knowledge. This indirectly raises once more the problem of things in themselves.

Kant's agnosticism, however, if taken seriously -- i.e., construed as the view that we have no determinate concepts of how things are in themselves -- means that no conceptual response can be evaluated...as correct or incorrect. Rules of the form

(Ceteris paribus) one ought to respond to  
 ∅ items with conceptual acts of kind C.

could never be rules in accordance with which people criticize conceptual responses; for, on his official view, the esse of any item to which any empirical predicate applies is already to be a conceptual response, not something that is responded to. To put it bluntly, only God could envisage the ought-to-be's in terms of which our conceptual responses are to be criticized.<sup>2</sup>

Once we recognize that it is objects in space which judgments refer to and not private mental items (already in conceptual form), then at least part of Sellars' criticism is answered. But there is a further problem raised by the fact that we all share a system of ought-to-be's: how are we to evaluate it? Again, Hume did not doubt the existence of natural inclinations for us to judge perceptual items in accordance with normative rules, but the objective validity of those normative systems themselves. If our account of the nature of Kant's theory of the unconditioned in Chapter IV, B, was correct, then Sellars is justified in his attribution to God of the

unique perspective from which not individual conceptual responses but the normative system regulating those responses can be criticized. It was shown in Chapter IV, C, however, that unconditioned entities (fundamental forces or force fields) can be immanent to experience, and therefore to conceive of appearances from the perspective of the unconditioned would be to judge them as things in themselves. Since it is the task of science to acquire knowledge of the unconditioned (at least when the objects under consideration are brute material objects and the science physics) science, if and when successful, gains access to information which allows it to criticize ordinary conceptual responses, and both criticize and/or verify the conceptual systems in accordance with which those responses are made. Such, at least, is the line of argument I wish to pursue.

While it is easy to see how science can criticize empirical concepts, by, say, forcing us to reclassify kinds of objects (for example: jade, which the Chinese treat as one kind, is really two different minerals: jadeite, a combination of sodium and aluminium; and nephrite, a combination of calcium, magnesium and iron), it is less easy to see how science could criticize categorical concepts -- formal structures of experience. Indeed, if the categorical system does form a normative structure which is epistemically necessary and rationally unrevisable, then science cannot criticize or alter it. Of course, if we do not have any a priori insight into

the necessary structures experience might have, then our construal of the minimum formal requirements for the possibility of experience and the normative systems of rules explicating it might be false; what appears as epistemically necessary and rationally unrevisable at one time need not appear so at a later time. Perhaps the Aristotelian assumption that all motion requires a mover, and the critique of this assumption provided by the Law of Inertia is an example of such a ground level conceptual alteration. For the present, though, let us stay with the Kantian situation where it is assumed we do possess an epistemically necessary set of normative rules. This is worth pursuing, not simply out of theoretical kindness to Kant, but because it is more pertinent to and representative of the situation any philosophical theory is ever in. It is one thing to study the breakdown of theoretical systems (moral, political, epistemological, whatever) and to experience vicariously or truly the emancipatory feeling which results. It is another problem to be in the world committed to a theory. Transcendental idealism, on my reading, amounts to an attempt to disassemble the responsibilities of theory, or of second level theory, of which Kant's epistemology is usually taken as being a paradigm case. Roughly, I want to suggest that scientific inquiry is the praxis of epistemological theory, that science completes philosophy. In order to substantiate this view, I must not only show how it can be done, but more importantly that the question of objective validity is a matter of principle which cannot

be answered through philosophical means. It will be these issues, therefore, which control the direction of my discussion of Kant's schematism theory.

To begin with, however, I wish to argue that there are no synthetic a priori truths; for only with the dismissal of theory of the synthetic a priori can we attain a proper evaluation of the status of Kant's categories. Moreover, there is an intimate connection between Kant's belief that there are synthetic a priori truths and his schematism theory. Finally, a proper evaluation of Kant's schematism theory will lead us into the problem of how normative systems can be verified.

3. What is the status of the judgment 'Every event has a cause'? Many would admit it to be: epistemically necessary; an analytic truth about synthetic propositions; universally true in virtue of the meaning of its terms but not reducible to a truth of logic; a rationally unrevisable truth protecting, so to speak, the lower limits of rational conceivability; etc. But what of Kant's claim that it is a synthetic a priori truth? We might be able to establish this proposition irrespective of any particular experience but as true of all of them; but this is inadequate to evaluate it as a synthetic a priori proposition since it does not uniquely characterize the synthetic a priori as opposed to any other second level propositions about experience. Recently Moltke Gram and Henry Allison have derived an ingenious and persuasive account of Kant's theory of synthetic a priori propositions which is not only plausible in its own right,

but is also in perfect accord with the rest of Kant's theory as we have presented it.<sup>3</sup> It will suffice for our purposes to give only a summary of their results.

First we must distinguish between analytic and synthetic judgments. Synthetic judgments are ampliative in that they extend our knowledge beyond that given in a 'definite' subject concept: "They are judgments through the predicate of which I attribute more to the subject of the judgment than I think in the concept to which I attach the predicate. The predicate, therefore, extends my knowledge beyond what is contained in the concept (OAD: p. 228)." In opposition to this analytic judgments simply lay bare or explicate what there is 'in' a given subject concept; they "serve merely to more clearly represent what is already thought and contained in the given concept (ibid.)." While there is no difficulty in thus distinguishing between the different functions of analytic and synthetic judgments, there is a difficulty in discovering criteria for the adjudication of instances.

For Leibniz all the predicates (accidents) pertaining to a specific subject could be, if one were God, directly derived from an examination of the concept of that subject. As has been noted, this presupposes a reduction of ontology to the exigencies of formal logic. Kant's objection to this theory is that existence is not a real predicate (his critique of the ontological proof again); questions of existence can only be answered through recourse to experience. But experience is not equivalent to the brutally given; experience can only be defined or charac-

terized with respect to the categorial framework which makes it possible (for us) in the first place. Accordingly, what does or does not belong to 'experience' is a transcendental (material) question. The difference then between analytic judgments and synthetic judgments is a transcendental one. A synthetic judgment states the existence of a real relation between a predicate and an object, while analytic judgments state only the existence of a logical relation between concepts. Analytic judgments, because they deal only with concepts, are explanatory in function, and therefore although they are debatable in the sense of being open to contestation, they are not as such falsifiable. Finally, if we grant that intuitions are individuals, then we can further specify synthetic judgments as ones in which a concept is predicated of an intuition referred to by the subject expression of a judgment. Knowledge can be had only if there is an intuition of an object, an immediate and singular representation through which the object is given, and if there is a mediate representation of the object through a concept picking out a feature (Merkmal) that object has in common with other objects.

From here the move to the proper characterization of synthetic a priori judgments follows neatly. Synthetic judgments "are only possible under the conditions that an intuition underlies the concept of their subject, which, if the judgments are empirical, is empirical, and if they are synthetic judgments a priori, is a pure intuition a priori (OAD: p. 241)." The only pure, a priori

intuitions we are presumed to possess are those of space and time. But we have already argued that the idea that we possess pure a priori intuitions of space and time is a mythic creation of Kant's theoretical imagination. The theory of pure intuitions assumes there are pure manifolds of space and time with characteristics which, by hypothesis, are characteristics holding of every particular experience we might have. We can know a priori what these characteristics are and that they will hold for every possible experience because the pure concepts of the understanding have for their objects features or characteristics of the pure intuitions of space and time, and both the pure intuitions of space and time, and the pure categories of the understanding are contributed to experience by the understanding or the understanding in its relation to sensibility, that is, the imagination. In fine, the theory of synthetic a priori judgments turns on the claim that there are features of empirical experience which are imposed upon it by the understanding and the imagination, and not just that we possess non-inductive knowledge of some features of experience, or that we have knowledge of some features of experience which cannot, in principle, be falsified or verified through inductive procedures.

4. The failure of Kant's theory of pure intuitions directly implies the failure of his Schematism theory. The problem of the Schematism chapter is: how can pure concepts gain application to appearances (A 138 = B 177)? If a concept is pure then by hypothesis it does not pick

out any material feature of an object. To what then can it refer? That is, what is there which is homogeneous with the pure concept and the object? The answer is a pure intuition or a characteristic of a pure intuition (= a transcendental schema).<sup>4</sup> It is characteristics of pure intuitions which must, after all, fall under pure concepts if synthetic a priori knowledge is to be possible. But this cannot be quite right as it stands, for while it is plausible to say that pure concepts can only have features of pure intuitions as their correlates, it is not plausible to say that a syntactic concept can have any sort of correlate at all. Since the pure concepts of the understanding are syntactic concepts, being the logical functions by which concepts are combined in judgments, they cannot be schematized. The schematism procedure will therefore have to possess two parts: it will involve, firstly, the locating of characteristics of pure intuitions which are our transcendental schemata; and secondly, the coming up with enriched concepts, which supplement the pure concepts of the understanding, corresponding to these schemata.<sup>5</sup> And this, of course, still depends on the theory of pure intuitions for its legitimacy. How then are we to proceed? Given the syntactic nature of the pure categories of the understanding, it seems plain we must preserve both moments of the schematism procedure, namely, the coming up with schematized categories, and the locating of, presumably, those most pervasive and general features of experience to which they refer. Once we have properly located those features of experience

falling under the schematized categories the Analytic of Principles will have to provide proofs for each of them, demonstrating them to be necessary conditions for the possibility of experience, and thereby part of a presuppositional framework for the possibility of experience.

Earlier it was mentioned that it seemed unlikely there could be a one to one correlation between the schematized categories and the features of experience they correspond to. This follows because there does not exist a tight connection amongst all three of the things we are interested in here, viz., the pure categories, the schematized categories, and the conditions for experience. If the relation between the pure and schematized categories is tightened, then there is no reason to expect the schematized categories to uniquely pick out those features of experience which necessarily condition it. (I am assuming here we have no way of showing a concept to be categorial except by showing it must be assumed -- presupposed -- if we are to be able to think about experience.) For example, that which is a subject and never a predicate in experience is, under almost any reasonable interpretation of the First Analogy, something quite dirempt from what would count as a schematized version of the categorial judgment form. It is not the permanent substance of experience to which subject expressions of judgments refer but to spatiotemporal continuants. To which then are we to tie the schematized categories: the logical functions of judgments or the conditions of

experience?

The question at issue is whether syntactical (grammatical) or semantical structures are to prevail as controlling factors in theory construction. Both from within and without Kant's system there exist decisive reasons for emphasizing semantic considerations. Firstly, as is generally agreed, the Metaphysical Deduction is a failure in generating a complete and unique list of pure categories. This implies, from within, a problem as to how we could discover an accurate listing of all the syntactical forms which establish the relative wellformedness of epistemic sentences or judgments. Secondly, even if there were a closed set of syntactical rules, this would not imply: a) they were strongly connate; and therefore, b) they were prior to and determinative of general semantical rules. Thus even transformational grammarians are now wont to admit that there is enough semantical relativity evident amongst different languages to suggest that even if there is some universal grammar they all share, the actual fit between syntax and semantics must be quite loose.

More decisively, the categories under dispute are themselves semantical, not syntactical. We are interested in whether we can or cannot do without certain basic semantical notions and still understand our understanding of nature. The question 'Under what conditions is knowledge possible?', points to problems about features of experience which presumably allow us to have knowledge of it. Kant's original dispute with Leibniz was over the question

whether the world we know could be the same world as Leibniz claimed to be composed of monads. It was an ontological dispute: monads versus things bound together in space and time through transeunt forces. (In the sense in which I am using the term, to have a 'semantics' is to have an ontology.) Fourthly, then, we are interested in the conditions for making true judgments, and truth is a semantical concept: it applies to judgments, not judgment forms. Of course, judgments must be wellformed, syntactically coherent, but we can investigate the truth conditions for asserting, or for it being possible for us to judge 'X is F', or 'X caused Y', without knowing why or what makes these grammatically wellformed judgments.

Lastly, we come to the crucial point, the suspicion that "Kant framed his system of categories with one eye (or indeed both eyes) on Newton."<sup>6</sup> Since the conditions of judgment are to be coextensive with the conditions for the objects of judgment, it makes sense to employ the best available knowledge concerning the objects of judgment to investigate the conditions of judgment, even if this knowledge must be treated critically, as Kant did (e.g., his critique of atomism).

Kant 's attention to Newton helps explain one puzzling aspect of his system. Space and time, Kant says, are the forms of human intuition. But why space and time? The status of time alone as a necessary form of intuition could be justified if all representations were reducible to determinations of inner sense. But this still would not explain the status of space as a form of intuition.

The first limb of any answer will have to state that, as a matter of fact, our sensory make-up is such that we can only be affected by objects with spatial and temporal dimensions. The second limb of an answer to this question must correlate this fact with Newtonian physics. This part of the answer turns out also to be factual in nature: the spatiotemporal display and arrangement of physical things is the lowest common denominator which all things in the universe, as far as we know, have in common. Thus it is a necessary condition for sensory affection that the affecting object be spatiotemporal in nature; the sole variables of Newtonian physics beside solidity (force) can be ordered along spatiotemporal matrices; the theoretical framework of physical things is the lowest common denominator amongst all theoretical frameworks; therefore, the framework constituting physical objects can serve as a guide to constructing a categorial framework which specifies the minimum necessary conditions which must be fulfilled if knowledge of any object is to be possible. And this, I suggest, would justify Kant in employing the Newtonian system as a guide in constructing his categories. I shall amplify at the end of this section on the idea of a hierarchy of categorial frameworks.

5. Employing Newtonian physics as a touchstone and guideline, the Principles of Pure Understanding offer a series of demonstrations of the conditions necessary for the possibility of experience. Each individual category is there shown to be indispensable for our understanding of nature. On the basis of these demonstrations a seman-

tical system can be constructed which explains how experience ought to be interpreted if a science (physics) which explains experience with respect to the conditions which make it possible is to be had. The schematized categories refer to general features of spatiotemporal experience, just as Kant's schematized categories were to have characteristics of pure intuitions corresponding to them: While the pure categories analytically provide the concept of an object in general, the schematized categories dictate the general constitutive (attributive) and individuating features which all empirical objects must possess; it limits, then, the form of our ontological commitments. Logically, we could have an ontology of individuals, monads, events, situations which have qualities independent of their occupants, things in fields, pure fields, etc. Any of these is logically possible if it can be shown to be internally consistent; not all of them can be generalized into a physics we could understand. According to the Principles, on my reading of it, the schema (semantical systems) of individuals, monads and events do not fit the general semantics Kant offers us.

The features of experience picked out by the schematized categories are thus highly general, structural (and so ontological) characteristics of spatiotemporal experience. These, again, may be described as generalizations derived from the study of a specific and highly successful universal scientific theory which arose at a particular time in history. Without the backing of transcendental idealism the ought-to-be's of this semantical system are,

as was suggested earlier, only putative ought-to-be's: experience could outrun them or, given their historical origin, our conceptual imagination could expand so it becomes we who move beyond them. The objective validity (= the right of employment) of any particular category or of the causal categorial framework as a whole depends upon our understanding of what it is to understand nature from the vantage point of a specific time in history. For Kant or the Kantian this is inadequate; the point of transcendental idealism was to make what nature is the same as what nature is for us, and this reduction is unsuccessful without some form of closure. By making space and time transcendentially ideal, and by so construing the constitutive and individuating features of experience so as to correspond to characteristics of our spatiotemporal experience Kant thought he had achieved such a closure.

According to any austere reading of the Deduction the most Kant can argue is that there must be some categories, continuous with the pure categories of the understanding, constituting spatiotemporal experience. And the 'must' here implies nothing stronger than an hypothetical necessity for cognition: we must believe there are some categories constituting spatiotemporal experience if we are to understand our understanding of nature. I cannot see how Kant could argue anything stronger without his idealistic theses concerning space and time. Recently there have been interesting attempts to show that it is very unlikely that any Transcendental

Deduction of the Kantian sort could succeed.<sup>7</sup> While my own reading of the situation tends to concur with these negative results, it would be inappropriate to discuss the general issues involved here. It is sufficient for my purposes to point out that the inconclusiveness of the Metaphysical Deduction, the (apparently necessary) looseness of fit between syntactic and semantical categories, and the failure of Kant's theory of the transcendental imagination make it extremely unlikely that any theory could a priori demonstrate the uniqueness of a categorial system. It would seem to be the second item in this list which is the most damaging. Concepts must be combined to a unity which is equivalent to the synthetic unity of consciousness if we are to think anything whatsoever. The pure categories as the logical functions of judgment, grounded in the spontaneous powers of the mind, accomplish this end. But, as we saw, at its best the schematism procedure requires we come up with new semantical categories to correspond to the characteristics of pure intuitions. How, then, could we show that only these categories suffice for the unity of apperception? Even if we could show, and I can think of no way in which we could, that these categories were somehow 'logically' continuous with pure categories, how could we demonstrate that no other categorial system could be? The most, then, that follows from Kant's theory concerning the transcendental unity of apperception is that there ought to be one categorial scheme constituting nature if we are to have unrestricted knowledge of

nature.

Now one may wish to argue that the point of idealism of a vaguely Kantian sort is to say that no questions beyond our understanding of our understanding of nature can be asked, and therefore there can be no point to the asking of skeptical questions, that speaking the way the skeptic does amounts to a certain form of 'non-sense'.<sup>8</sup> A position of this sort must accept the fact that history may prove us wrong about our understanding of our understanding of nature at any given time, but beyond that admission it has in its favor a realistic understanding of the fact that at any given time we exist within the horizon of whatever conceptual scheme we might possess at that moment; in contemporary philosophical parlance this would amount to the claim that we are inside language, language is not inside us. As I understand it, this position does not reduce to a conventionalism of the Carnapian type, for it does not deny that some concepts are indispensable. Quite the opposite: From the argument of the Deduction it follows we must think whatever we do think through concepts; thus intellectual intuitionism is false. But if intellectual intuitionism is false then our only access to the nature of things is through conceptual argument concerning our conceptual system. Thus once we have demonstrated that a particular state of affairs not obtaining cannot be grasped coherently employing the conceptual tools we possess, we have demonstrated all we can demonstrate. When the skeptic then asks, for example, why cannot something go clean out of existence,

or claims that under laboratory conditions there was this event and it had no cause, the idealist replies that the skeptic must in uttering these challenges be appealing to an intellectual intuition for in our conceptual world things cannot go clean out of existence and every event has a cause. Like the Carnapian the idealist regards skeptical challenges as, more or less, non-cognitive, that is, as making an appeal to an intellectual intuition, and this form of intuitionism is false.

This position is, I think, an heir of Kant's, and has much in common with that of Wittgenstein, only where Kant has 'concepts' Wittgenstein has 'language', where Kant appeals to categories Wittgenstein appeals to criteria and logical grammar. Both theories refute skepticism indirectly by first refuting intellectual intuitionism, and then showing that we must believe  $X$  or  $X$  is necessary if we are to continue to speak and think as we presently do. The proper task of philosophy on this account is to explicate and if possible criticize and reconstruct the conceptual scheme we actually do employ. And the only way it can do this is by examination of that scheme (ordinary language; judgments), as well as the best available knowledge, that is, the sciences and arts of its time. How else could Kant contrive his categories than through an examination of the characterizing parameters of Newtonian physics? If we lack intellectual intuition into the Ideas or the Mind, where else is there to look to see how things hang together in the most general conceivable way than those places where things are speci-

fied as hanging together in a particular way?

With all this, there is an evident flaw to this construal of Kantian idealism: if, as history has shown, not all categorial frameworks are equal, then why should we accept 'this' framework? In other words, since the refutation of skepticism depends upon an appeal to 'this' framework, and no theoretical closure for this framework has been provided, why should we accept this framework or the putative refutation of skepticism it allows? Against the conventionalist challenge Kant was right in seeking closure for his system; it is not enough to say 'And X is a necessary condition for us to think and speak as we do'; we must be able to add 'And X exists'.

The conceptual idealist does not explain why we should not think that some categorial framework might not be able to generate a uniqueness claim for itself, and therefore why we should not, au fond, be realists. The realist of the Lockean sort wants to say we must conceive of the world in accordance with 'this' categorial framework for material, theoretical reasons, not a priori reasons. Under the guidance of philosophy science can provide closure and thus theoretical justification for our conceptual system. In order to demonstrate the propriety of this claim I shall begin with a critical examination of a theory of Hilary Putnam's concerning the nature of substance universals.

6. Putnam wishes to argue concerning substance universals or sortals (e.g., 'oak', 'gold', 'camel') that

their meaning is not determined by their intension (or concept), and therefore that a substance term's (substance concept's) meaning does not determine its extension.<sup>9</sup> If this traditional view is false, then so must be its traditional corollary, namely, that 'grasping' the sense of a term or understanding a concept is equivalent to being in some particular and complex psychological state. Putnam proceeds by way of a science fiction example. Let us suppose that besides our own earth there existed somewhere in the cosmos a twin-earth which was an exact replica of our own earth in every conceivable way, with one exception: while water on earth is  $H_2O$ , water on twin-earth is a complex chemical compound, which we shall designate as XYZ. In this story we are assuming that water appears in all the same places on both planets, is used for all the same purposes, possesses all the same external, sensible properties, etc.; everything about them is the same except water on earth is  $H_2O$  and on twin-earth is XYZ.

Now Putnam wants to make the very odd claim that in 1750, before we knew as we now know that water on earth is  $H_2O$  and on twin-earth is XYZ, that K and his doppelganger on twin-earth, who again are alike in every conceivable way, though they had all the same experiences and were therefore in the same psychological states at all the same times and had the same associations whenever they talked about or recognized water, nonetheless understood different things by the term 'water'. One reason for making such a claim would be the following: although they

did not know it, K and twin-earth K were referring to two different things or kinds of things ( $H_2O$  and XYZ) whenever they used the term 'water'. But why should we conclude from this they understood different things by the term 'water'? Earlier we argued that when we designate (ostensively) an individual before us as 'gold' or 'water' we intend that other substances instantiating the same vague cluster of primary variable values and interactional properties be the same as it. But since first-order properties are highly variable our 'it' cannot be constituted or determined by our complex idea of it. Complex ideas have only recognitional and not constitutive value. Hence the  $same_f$  relation which determines what other entities are the same as the 'it' before us being ostensively defined is a theoretical relation.<sup>10</sup> From this we can glimpse a sound motive behind Putnam's curious claim: since 'water' is a substance universal and intended therefore to be constitutive of some domain of entities, if, according to the theory where intension determines extension, we allow 'water' to mean the same thing on earth and twin-earth in 1750, then we would be in the embarrassing position of having the same substance universal constituting two different kinds of objects, the same constituting intension with two different extensions. Putnam therefore attempts, using the  $same_f$  relation as a theoretical relation, to invest into a term what its extension ideally is. His loss is the loss of intensions and psychological states altogether. On his theory it would follow that in 1750 K and his doppel-

ganger on twin-earth did not understand what they understood.

How can Putnam protect himself against the charge of simply begging the question at issue by ignoring a term's intension as against its idealized extension? Why should we give in to the demand that the same<sub>f</sub> relation theoretically understood determine the sense of a term simpliciter. A step in the direction of a defense is Putnam's "Hypothesis of the Universality of the Division of Linguistic Labor".<sup>11</sup> Briefly, this specifies that for natural kind terms and the like it is not an average speaker's grasp of a term which fixes its extension, but rather the collective linguistic body, some of whose members have specialized knowledge which allows them to 'know' what the real extension of a term is. Average members of the linguistic community use natural kind terms based on a stereotypical understanding of what entities do and what others do not belong to its extension. Tacitly, however, these speakers depend on other member's (specialists and scientists, say) knowledge to make this scheme workable. This is plainly right, but it will not save Putnam's argument. In 1750 there were no experts who could inform K and his doppelganger that water on earth was H<sub>2</sub>O and on twin-earth XYZ. As a last ditch attempt, perhaps Putnam could claim the collective linguistic body extends through time as well as space. This will not work, and indeed points to the central flaw in Putnam's theory: the absence of history as a real factor in the determination and development of

concepts. In fact, Putnam's error is the exact reverse of Kant's and the idealist's: since we cannot trust consciousness to determine the objective validity of a concept, then we must throw all our trust upon the 'world'. Note that it is a question of objective validity which is in question here; our real problem is whether the term 'water' picks out a unique class of existents. If recognitional criteria are inadequate for making identity claims, and no constitutive criteria are known, then we have no grounds for claiming that 'in the world' there exist a distinct class of entities which we designate by the term 'water'. 'Water' would then be as mind-dependent and subjective a term as the skeptic claims 'cause' to be. On Putnam's view, if we read the same<sub>f</sub> relation as an atemporal or nontemporal relation, then we are, ipso facto, assuming the world will vindicate our nontheoretical usages, i.e., the objective validity of the term in question has in principle been already affirmed.

What has gone wrong in this logicist determination of ontology is that it has bracketed out the intentional, psychological background of the same<sub>f</sub> relation itself. When we ostensibly define water as 'everything which is the same as this liquid before me now', we are not making a statement of fact, i.e., ceteris paribus, everything that is the same<sub>f</sub> as this stuff here is water, but only a statement of intention: we intend that 'water' designate a natural kind term such that everything that stands in the relation same<sub>f</sub> to 'this' is water. We do not know, in 1750 say, that water is a natural kind but

we think our term 'water' does designate something in the world which possesses some constitutive properties -- which we call sometimes the 'form' or the 'real essence' of the thing in question -- which uniquely distinguish it as being the kind of thing it is. We cannot employ the theoretical same<sub>f</sub> relation constitutively until we possess a theoretically grounded decision procedure in accordance with which we can determine whether any X is the same<sub>f</sub> as 'this' one. In the absence of a decision procedure the same<sub>f</sub> relation does not as such determine the extension of a term, but serves only as a heuristic conceptual device to express our intention of treating a term as a natural kind term. And to say we intend to treat 'X' as a natural kind term implies the intension of 'X' is incomplete until its collective intension is coextensive with its determinate extension. In short, a concept is partial until closure is provided for it. In Locke's terminology this is equivalent to saying a complex idea of a substance expresses only its nominal essence, and therefore possesses only recognition-value; this complex idea ought, however, <sup>to</sup> correspond to the real essence of a thing or substance. <sup>↑</sup>

7. This theory uneasily straddles what are thought to be two incompatible theories of reference. Consequently, what I must now do is arbitrate this debate in a way which will allow the ideal of intension and extension being coterminus <sup>o</sup> to become plausible. As the title of this chapter indicates, my route to this goal will involve an explanation of the nature of the relation between judg-

mental and scientific knowledge.

The two theories of reference (or meaning) in question here can be designated as the "a priori" theory and the "causal" theory respectively.<sup>12</sup> On the a priori theory the reference of a term or concept is determined by the 'internal' features of that term or concept. Thus a decision can be made as to what a term refers to solely through consulting the speaker or speakers who employ that term, i.e., no recourse to <sup>the</sup> nature of things is necessary in order to determine the meaning or reference of a term. The sense of a term is the means by which that term is associated with something in the world. Kant's theory of concepts is an exaggerated case of this Fregean doctrine: "But a concept is always, as regards its form, something universal which serves as a rule (A 106)." The exaggeration of Kant's theory lies the corollary he adds to his rule thesis: "Combination does not lie in objects but is an affair of the understanding alone (B 135)." Plato canvassed this view in the Theatetus (190 a), where judgment is said to be a statement pronounced silently to oneself. The criticism Plato brings forward against this theory is that false judgments are not possible in accordance with it. If judgments are the source of combination of the very phenomena they are judgments of, then under what conditions can we say a judgment is false? Similarly, if a concept is a rule for either the construction of an object in imagination, or the combination of a manifold of various representations in intuition, how can that concept ever be inadequate to its objects? Kant

grants that a concept may be imperfect or obscure (A 106); but what sense can be given to obscurity on this theory? What might the difference be between a well or ill constituted object? What would a clear and perfect concept be?

The causal theory of reference -- the famous "wax" theory of the Theatetus -- whereby reference is a relation between a term and an object in the world while just possibly being able to solve this problem is too obscure in its own right to be an acceptable replacement for the a priori theory. The causal theorist is committed to claiming that no fact about a referent follows from any non-relational feature of a concept, and therefore that no historical facts about what in the world is responsible for the occurrence of a term need be part of any concept. But if all any speaker knows of a term are its non-relational features, then it follows that no speaker need be aware of the 'meaning' of any term. And this, as my critique of Putnam showed, is extremely implausible. No matter what else the causal theorist says about meaning, this counter-intuitive residue -- that no speaker need be credited with knowing the meaning of any term -- will remain.

The intension-extension problem as Putnam presents it represents the form-matter dilemma of modern theoretical semantics. What needs to be done is to come up with a statement of the situation which avoids putting it in terms of form and content, intension and extension. But the theory of real essences as I have been employing it

does not rest on these distinctions.

Concepts are rules on the basis of which we can affirm or deny that concept of any object we are presented with. Everything that has properties q, r, s, is H; and nothing lacking q, r, and s is H. This represents the sound, intuitive core of the a priori theory, and is consistent with Kant's view that predicates pick out characteristics of things. Suppose now we are presented with two new objects, x and y, both of which possess q, r, and s; but x possesses u and not v, while y possesses v and not u. Is either x or y H? Might both be H? What precisely is the nature of the problem we are faced with here? There exist two objects, both fulfilling all the requirements which up till the present have been sufficient for designating any object as an H. The existence of the two new properties u and v suggests, just possibly, that there is some heterogeneity in the class of H's which we had not up till now suspected. This problem of heterogeneity should not be reduced to the question as to whether or not x and/or y are H, but should rather be seen as the problem of whether the property cluster q, r, s, should be extended to include u and/or v; that is, are u and/or v inductively projectible for H? Putting the question in this way suggests that we do not consider q, r, and s only as conjuncts in accordance with which H's can be picked out from their environment. We assume there is a unity belonging to q, r, and s which, all things being equal, will naturally include or exclude u's and v's. What we are missing in the first place, then, for our concept

'H' is an explanation for the fact that q, r, s, ought to belong to any H. Explanation serves as a vindication (justification) for the adequacy of our empirical concepts.

It is necessary to presuppose that objects exist independently of us, and that they are carved up and sorted into some natural order. Pace Kant, combination is not solely an affair of the understanding. Ordinary concepts supply us with putatively necessary features which any object to be of a certain kind must possess. The fact that the designated features are only putatively (and intentionally) necessary is a result of the lack of an explanation for those features and no others belonging to the objects in question. The discovery of the real essence of an object is not the discovery (à la the causal theory) of what an object really is, but the discovery of the causal grounds for the properties which make an object the kind of object it is. Causal and explanatory grounds allow us a way of regimenting our concepts such that as a whole they can correspond to the natural order of things. Unless we grant in the first place (what natural language and the advance of science clearly evidence) that there is a natural order of things we shall never be able to explain the adequacy or inadequacy of concepts.

We began by suggesting that a concept was adequate to its objects only if for every object we had a decision procedure whereby we could affirm or deny that concept to that object. Decision procedures, because they stand

halfway between the a priori and causal theories, are theoretically vague criteria for concept adequacy. An assignment of properties is justified only if there exist causal grounds for those assignments. We say x is H only if x has r because it is presupposed that r's are projectible for H's, where H's are themselves projectible; and r's are projectible for H's only if H's possess r's necessarily. For this claim we require some causal ground. Thus the adequacy of a concept has to do not with the possession of a decision procedure for acceptance or rejection, but with the justification of that decision procedure. A concept is adequate to its objects only if for every feature in accordance with which we classify an object as being of the kind designated by that concept we can supply a causal source. Real essences function as unexplained explainers within the system of natural kinds.

Does this proposal successfully mediate between the idealistic and realistic extremes? I have maintained this much of the idealist heritage: a theory of reference or meaning must at least be a theory of understanding; we must be able to give a reasonable account of what it is a speaker knows when he knows the meaning of a term or sentence of a language.<sup>13</sup> To know this is to know the use of a term, the rules for the application of that term in different and varying circumstances. However, to say what it is a person knows when he grasps a term is not to claim that what he grasps is either adequate or inadequate to its assigned tasks. And, mutatis mutandis,

if a person makes a judgment in accordance with all known rules of usage, etc., it does not follow that that judgment is true although there may be no outstanding information such as would allow anyone to deny its truth. If our best scientific theories can be defeated by progress, then why should not singular judgments of matter of fact be similarly defeated? What needs clarification is the way in which this sort of defeasibility applies to ordinary concepts and normal singular judgments.

What I have suggested is that we actively distinguish between those cases where a judgment or a concept has been regimented to theory and those cases where it has not. And we must further distinguish between those cases where we can regiment a concept to a comprehensive and true scientific theory and those cases in which we cannot. Ordinary speakers of a language treat the rules of that language epistemically; they treat the properties q, r, and s as conjuncts which conjointly characterize an object as H. Thus they may even think that it is only epistemically necessary or analytically true that nothing is gold which cannot be assigned the atomic number 79. In fact, however, we have all the weight of the comprehensive scientific theories which make law-bound the structural relations exemplified in the table of elements to justify us in assigning the atomic number 79 to the concept 'gold'. Thus for certain types of terms and concepts we have a justification which is not epistemic; they do not depend for their validity on our say so, and are not, therefore, susceptible to the whims of fashion

or the play of convention. Compare here the predicate 'is gold' with the predicate 'is a table'. When a person assigns the predicate 'is a table' to chairs, coffee cups, and canaries indiscriminately all we can do to right the situation is try and explain to him that that is not how we use the word 'table'. But, let us imagine, although he grants us that he had been misusing the word 'chair' to apply to coffee cups and canaries, he will not surrender his belief that chairs and tables are of one kind; chairs have (more or less) four legs, and he usually eats his meals off of chairs. He may be showing bad manners in speaking and acting as he does, but is what he says false? If we all ate off chairs, perhaps the word 'chair' would disappear from the language, and what we now call 'a chair' would be called 'a table'. The important point here is this: there is no matter of fact beyond convention and usage which could serve to justify our present use of the predicate 'is a table'. Tables form a kind, but not a natural kind. Whatever laws attach to them, attach to them in virtue of those natural kinds of stuff of which they are made; qua tables, there are no laws holding of them.

Realism and essentialism then take their bite not at the level of meaning (involving as it does a theory of first order understanding), but at the level of explanation and justification. Second order understanding for natural kind terms and the like involves recourse to good theory; second order understanding for general terms applying to artificial objects involves

recourse to the rules and practices of a linguistic community generally. We can justify the truth of an ordinary judgment of matter of fact about some natural object by demonstrating the adequacy of the concepts employed in making that judgment. Usually the onus of justification for a judgment resides in the terms used in making the judgment and not, for the sorts of cases we are interested in, in the judgment itself. Judgments as judgments are concerned with contingent states of affairs. This contingency is implicit in the perspective from which judgments are made and evaluated. To be able to understand a judgment one must be able to understand all its parts. Understanding all the parts of a judgment involves being able to determine what those parts refer to in the world. Having understood all this we can then evaluate the judgment. The goodness of judgments, then, is more like the goodness of non-natural kind concepts than like natural kind concepts. Judgments function in a space free of the direct constraints of causal justification, explanation, and theoretical inference.

The bringing in of the notion of causal sources and justification indicates that natural kind terms are projectible because they are law-bound; but they are law-bound because there are natural necessities. There being natural kinds and natural necessities is what permits our notions of cause and law to get a grip on reality in the first place. Lawlikeness is not an intentional creation of the mind, and neither natural kinds nor natural necessities depend on the mind for

their existence. We shall return to these problems momentarily.

What now of our earlier conjecture concerning the primacy of extensions over intensions, and the connection of determinate extension with conceptual closure? In the brighter light of the above Putnam's views on the primacy of extensions look somewhat inflated. The Greeks, for example, might well have been able to determine the exact extension of the term 'gold'. What they did not know is why the particular tests they employed, and the specific properties they claimed any object was required to possess if it was to be classified as gold did pick out and constitute an object as being gold. They lacked an explanation, and thus a justification for their tests and property specifications. The example of reclassification of items from one kind into another tends to mis-focus the problems at issue. In cases of reclassification we find one causal ground where we thought two existed, or two causal grounds, say, where we thought one existed. These are but extreme cases where the regimenting of ordinary concepts to their real grounds requires the dropping or the addition of some concepts. Since not all explanation involves radical reclassification, it follows that the discovery of the true extension of a term is a function of the process of explanation and not, as the causal theorist suggests, the other way round. The problem of objective validity is the problem of explaining how and why an ordinary concept manages to successfully refer to a class of objects in the world. Hence the claim that

ideally intension and extension should be coterminus is just another way of saying that intensions must and can be regimented, justified, and explained.

Normally a priori theorists are left with the problem of accounting for the fact that the sense of 'orange' picks out oranges and the sense of 'apple' allows us to refer to apples. As Wheeler rightly says, it is a matter of blind fortune for the a priori theorist that any predicate happens to have any extension at all.<sup>14</sup> How is the a priori theorist to explain the fact that oranges don't most of the time shade off into apples and vice versa? This fortune need not be blind if we allow natural kinds into our ontology, and allow further that science can make discoveries about the world which can explain our referential fortunes.

8. In carrying this theory over into the Kantian context let us begin by staying with the extension-intension formulation of the problem, since, against the background of the arguments of Chapter II, this formulation will pay the quickest dividends.

For nearly every (natural) empirical term capable of reapplication in different instances there is a problem about how we can make its extension determinate. Questions concerning the determination of the extension of terms concern not whether a term has a use, or whether we have adequate rules for determining proper and improper use, but whether a term does, as we do naively suppose, discriminate a unique class of items in the world. Again, there are questions concerning the objective validity (=

the 'and X exists' formula) about empirical concepts which are very like those arising with respect to categorical concepts, and we answer these questions (provide closure for these concepts) by reference to scientific theories whose use in these circumstances we justify by providing a realistic interpretation of their import.<sup>15</sup>

A natural temptation is to want to reject this account as even possibly applicable to Kant's categories. Categories, after all, are higher order concepts than sortal concepts. Categories, as opposed to sortals, do not, for example, have extensions in the sense that any entity could fall outside their extension. I have argued that this is not the case, as Kant's troubles over the ontological status of persons and living things demonstrates. If persons and living things do not fall within the extension of the categories, then they are not constituted by the categories.

Once more it is important to distinguish between the categories as objectively valid in the sense of our having a right to employ them, and as constitutive in the sense of supplying with existential import the determining predicates for the kind of thing in question. Kant establishes the objective validity of the categories at most in the first sense. However, if there exist a plurality of categorial frameworks, then these frameworks must function as higher order sortals. Each categorial framework thereby forming an incomplete semantical system for the domain of entities it putatively constitutes. Both their incompleteness and their constitutivity

can be easily seen. Generally, we would agree nothing is water which is not  $H_2O$ , and nothing is a lemon which does not have such-and-such a genetic code. How are we to explain or justify the use of atomic structure as determinative of kind for material things, and the use of genetic codes as determinative of kind for living things? The assumption here is that things vary as to their kind in accordance with their kind, where this second 'kind' determines what sorts of variations occur within its domain. Categorical frameworks mark off ontological kinds; they are the concept of an object for all the objects falling within their domain. But if there are a plurality of categorial frameworks, then until closure is accomplished they are challengeable, they can be criticized and overthrown. Therefore, they must be partial or incomplete.

It is uncontroversial that Kant intended to replace ontological locutions with epistemological locutions. Thus he claims that his categories jointly form the complex epistemic predicate 'is an object of experience', as opposed to the more natural interpretation of them as forming the complex sortal predicate 'is a material object'. Kant's interpretation looks plausible only when other possible candidates for the title 'is an object of experience' are removed. When other kinds of objects are considered, then Kant's claim that to be an object of experience is to be a material object begins to look more contentious. The *Analytic of the Critique of Teleological Judgment* certainly looks as if it were

asking after those concepts necessary for us to make judgments about living things, and hence those concepts constitutive of living things. Moreover, the central argument of Kant's ethics is decisively ontological in character.<sup>16</sup> One might read Kant's question about the possibility of the categorial imperative as asking about how reason can be practical, or why the moral law is a categorial imperative for the human will. But both these interpretations fail. That reason is practical is part of Kant's starting point since it is implied by our awareness of obligation. The moral law is a categorial imperative for the human will because there is a division in the will between the rational and sensible, thereby exposing the will to the temptation of non-moral imperatives. The real question of Kant's ethics is why the moral law is bound to the will with necessity. And a proper answer to this question involves, at least, stating that freedom is the essence of the will and the ground of reason and action. Thus what Kant's three critiques really offer us is an analysis of (the essential moments of) three complex sortal predicates -- 'is a person' (or moral agent), 'is a living organism', and 'is a material object' -- based upon the different conceptual frameworks at his disposal. The important question is whether these three predicates have or lack the extension Kant's analyses lead one to suspect they have once Kant's own a priori legislations of their extensions is put aside.

Now the reason why the intension-extension formulation of the problem is more theoretically perspicuous

here than my explanation formulation should be easy to perceive. Each of the three complex predicates with which we are concerned promises or provides the ultimate principles in accordance with which we give our explanations of those properties we take to be typical of the kinds of individuals which fall within their respective domains. Thus if each of these three predicates designates an ultimate kind, then there will be no further something (an essence or a nature) which can explain it. Thus questions about the extension of these three predicates are simultaneously questions about the ultimate forms of explanation we require if we are to be able to explain all there is. This heterogeneity of explanatory forms is clearly a source of difficulty. Our ordinary conception of an explanation is so closely bound to causal explanations that even when we can conceive of other forms of explanation (in accordance with ends or in accordance with reasons) these do not usually suffice in helping us to understand the necessary relation between essences and properties. To put this thought another way: Our conceptions of essences and natural kinds are deeply entwined with our conception of natural necessity, and natural necessities are usually conceived as being causal necessities. If the essence of man is freedom, then those generic properties which flow from that essence will not flow in a causal way. But if a generic property is a necessary property for a thing of a kind, then what sort of hold on reality can we give non-causal natural necessities? To disengage the concept of essence from

the constraints of causal thinking, however, is a task which will have to wait for another occasion.

That the problem of ultimate kinds is enmeshed with the problem of the ultimate forms of explanation we require implies that debates <sup>about</sup> categories are debates about what (for Kant's categories, say) makes a particular science explanatory. My final chapter will offer an interpretation of the Principles based on the problems involved in generating an adequate conception of what an explanatory science would be like. In the next section I shall take up the problem of the nature of necessity. First, however, I must say something about my earlier claim that the difference between the causal and teleological categorial frameworks is one of generality.

On the basis of that claim I suggested that Kant might have been led to believe that the causal categorial framework was constitutive of experience in general because to every kind of object in the world we can attach the predicate 'is a material object'. Not everything in the world, however, is (only) a material object. Thus we could not understand living things unless we possessed both the causal and teleological frameworks. To explain, then, the applicability of Kant's categories to all objects of experience while allowing them to be only constitutive of material objects we must adopt something like the following levels of being doctrine. Let us assume there are four maximal kinds of individuals in the world:  $M_1$  representing the lowest maximal kind (material objects),  $M_4$  the highest kind (persons), with

$M_2$  and  $M_3$  representing living organisms and animal life respectively. With each maximal kind,  $M_1$  through  $M_4$ , there is associated a categorial framework constitutive of the kind of thing with which it is associated. Categorial frameworks are, roughly, complex substance universals or sortal concepts for the kind of thing which they are associated, and represent, therefore, on a Kantian analysis, the complex concept of an object for the kind of object in question. Thus, in accordance with our incomplete sketch of the function of schemata, each categorial framework is a partial semantics for the domain of objects over which it ranges, and each framework therefore is essentially incomplete without the science of its domain. We discover the constituting power of a categorial framework by discovering the laws regulating and explaining the individuals constituted by that framework. Again, the laws which fill in the partial semantics of a categorial framework constituting some domain of individuals explain the unity of the objects of that domain, and thus answer the question of what binds the properties of those sorts of individuals into a unique kind of one.

Let us say, hypothetically, that the unity of persons is regulated by the coherency and success they have achieved in being free and rational beings, since, ontologically, spontaneity grounds thought and action. (This would imply that the self-identity of persons is not, like all other entities, given, but rather to be achieved. This is paradoxical, but I think nonetheless

correct.) What, then, are we to say about the fact that persons normally carve a unique path for themselves through space and time, in this like material objects, and possess as well the unity of a living organism? If we say that  $C_1$  is the categorial framework constituting  $M_1$ , etc., then our answer is this:  $C_1$  constitutes the objects of  $M_1$ , and thus, when complete, is necessary and sufficient for the explanation of any object belonging to  $M_1$ .  $C_1$  is also necessary but not sufficient for the explanation of any object belonging to  $M_2$ ;  $C_1$  plus  $C_2$ , when complete, contain the necessary and sufficient conditions for the explanation of any object belonging to  $M_2$ .  $C_2$ , however, is not strictly autonomous from  $C_1$ ; it is made up of  $C_1$  laws under the guidance of a different body of laws, in the way in which, for example, physical and chemical laws function under the guidance of unique teleonomic laws in living things. On this account, Kant was correct to assume that  $C_1$  was a necessary condition for the possibility of any knowledge at all, but not sufficient for the explanation of all natural phenomena. Moreover, if a categorial framework, say,  $C_4$ , is applicable and constitutive of some entity, then all other categorial frameworks,  $C_1$  through  $C_3$ , are necessarily applicable to the entity in question; which is to say, the applicability of any categorial framework in this world to naturally existing entities entails the applicability of all the categorial frameworks existing beneath it. If identity is a direct function of the substance kind to which a thing belongs, then although the criteria for the

identity of a thing is derived from the category constituting it, necessarily all criteria derived from lower categorial frameworks will apply to it, or, what is the same thing assuming a principle of categorial pre-emption, the lower level criteria will be included in the higher categorial framework. Thus there is no choice to be made with respect to persons between mental (rationality, memory, whatever) criteria for identity and a bodily-continuity criterion; if the first is necessary, then so is the second. Criteria for identity are, as it were, cumulative up the evolutionary and categorial scale.<sup>17</sup>

This makes plausible the view that the categories constitutive of material objects can be coextensive with the categories characterizing the necessary conditions for the possibility of experience. The next step in this argument is to show that when complete the categories as constitutive of material reality are not just conditionally necessary for us to continue thinking and speaking as we do now, but they are unconditionally necessary, grounded in the nature of reality. But to see what this involves we must examine what Kant has to say about the nature of modal concepts.

#### B. Modal Progressions

9. Kant says the possible is that which "agrees with the formal conditions of experience, that is, with the conditions of intuitions and concepts (A 218 = B 265)." Real epistemic possibility ( $P_e$ ), that is, the possibility of empirical objects, is delimited by the transcendental conditions of experience in general. Logical possibility

would be that which is in agreement (consistent) with the laws of logic; real possibility is that which is in agreement (consistent) with the conditions of experience as defined by the categorial system in its schematized, spatiotemporal guise. Consistently with this line of thought, Kant defines the actual as that which fulfills the conditions for possible experience and is "bound up with the material conditions of experience, that is, with sensation (A 218 = B 266)." If these two definitions are consistent, then the following definitions of possibility and actuality must be incompatible with one another since they are jointly incompatible with Kant's first set of definitions: "The schema of possibility is the agreement of the synthesis of different representations with the conditions of time in general... The schema of actuality is existence in some determinate time (A 144 = B 184)." If we pass over the emphasis on time here to the exclusion of space, it is nonetheless plain that existence at some time and place is a more encompassing criterion for actuality than sensation: the former is not reductively relativized to subjectivity in the way in which the latter is. Something could exist at some time and place although no one ever saw it or was thus sensorially affected by it. The spatiotemporal sense of actuality is evidently ontic and not epistemic.

What is required is to connect the fact of something existing at a time and place with its being in accordance with the conditions for experience. It is difficult to do this, however, without conflating ontic and epistemic

notions. Kant tries the following route.

The postulate bearing on the knowledge of things as actual demands perception (and, therefore, sensation of which we are conscious), not to be sure immediate perception, of the object whose existence is to be known. What we do, however, require is the connection of the object with some actual perception, in accordance with the analogies of experience, which define all real connection in an experience in general. (A 225 = B 272)

Elsewhere Kant makes a similar sounding point: "For everything is real which stands in connection with a perception in accordance with the laws of empirical advance (A 439 = B 521; cf., also, A 495 = B 523)."

The second sense of actuality is  $P_e$  plus sensation (an actual perception) plus the laws of empirical advance, which must be taken to be the laws of physics and not just the analogies alone. We require determinate physical laws to carry us from a given perception to another possible perception and thereby an actuality because a perception plus the knowledge that that perception is (or should be) tied up with others gives us no determinate knowledge at all except that derived from perception of the object directly before us. Determinate knowledge of not perceived actualities thereby requires determinate physical laws.

This theory of actuality is also weaker than the notion of the actual as that which exists at a determinate time and place. In accordance with the 'perception plus laws of empirical advance' theory if a given (kind of) object is not captured by the laws of empirical advance at some  $t_1$  but is captured by them at  $t_2$ , then the object is not actual at  $t_1$  but is at  $t_2$ . There is, of course,

an obvious point to limiting existence-claims to those capable of determination. What sense would there be to saying 'X(s) exist' if we could not connect X with anything we do know to exist, no matter how remotely? But regardless of how far we elaborate this conjecture, allowing concepts of various kinds of objects to gain their sense through analogical and metaphorical extension, we are still left with the extremely counter-intuitive idea that something does not exist until we have concepts for determining its existence in accordance with laws. When we discussed the notion of the thing in itself in relation to scientific inquiry we saw it was not adequate to leave that part of the 'world' as yet undetermined by laws as an indeterminate, amorphous 'something' but had, in fact, to presuppose the unknown to have a lawful structure which was in some unspecified sense continuous with the laws constituting the known. If nothing else, this suggests we are always necessarily working with a sense of the actual which goes beyond the hasty identification of knowing and being. What is this enlarged idea of what exists?

Epistemically, it is a sufficient condition for the actuality of an object that it accord with the conditions for knowledge and it affect our senses. This cannot be a necessary condition because it depends upon the "grossness" of our senses; it thus leaves out those entities which are colorless, odorless, and tasteless, e.g., a large family of gases. Sensory impact thus needs to be widened so as to include those instruments we employ as

extensions of our senses. But sensory detection in its widened, expanded sense is plainly only a special case of being a subject or cause of change: what is actual is what takes part in causal interactions, and it is this ability which relates Kant's two earlier criterion for actuality, i.e. sensory affection and existence at some determinate time. However, we cannot employ the 'cause or subject of change' criterion by itself, for that again would cut it off from its epistemic base.

Being the cause or subject of change is simply the generalized ontic equivalent of being the object of a possible perception plus the ideally complete set of laws of empirical advance. But this is ambiguous: if we have a complete and determinate science, why do we need the transcendental principles of knowledge to delimit the realm of the possible? Consider the following: In accordance with  $P_e$  unicorns are possible but poltergeist are not. But how are we to delimit the domain of the actual? At  $t_1$  phlogiston is actual but unicorns are not; at  $t_2$  the aether is actual but phlogiston is not; at  $t_3$  electrons are actual but the aether is not. But is there anything more than a difference in degree between unicorns are possible objects of knowledge but poltergeist are not, and the aether is a possible object of knowledge (around 1900, say, when there seemed to be confirmatory evidence for its existence) but phlogiston is not? Not if we admit that Kant's discoveries were historically based and that his system of categories lack closure. Note, the point here of the categorial system lacking

closure is that we do not know which of the categories are really indispensable. We do know, for example, that not all of Kant's categorial demands are compatible with the principle of special relativity. And this is not just the problem of Euclidean geometry, for a Kantian could maintain Euclidean geometry if he were prepared to dispense with normal induction.<sup>18</sup>

It is worth pointing out that a line of argument similar to the one being pursued here is evident in the Postulates. Kant is uneasy about the fact that, for example, at  $t_2$  the aether is hypothetically actual and in accordance with  $P_e$  (the transcendental principles of knowledge) phlogiston is still a possible object of knowledge. Kant therefore decides for a direct equation between the actual and the possible: everything actual is possible, that is, the possible extends only as far as the actual. In justification of this he says, "It does indeed seem as if we were justified in extending the number of possible things beyond that of the actual on the ground that something must be added to the possible to constitute the actual. But this (alleged) process of adding to the possible I refuse to allow, for that which would have to be added to the possible, over and above the possible, would be impossible (A 231 = B 283-4)." Kant's equation between the actual and the possible rests on the false premise that the conditions of possibility ( $P_e$ ) include the material conditions of experience. This deceptive shift sounds plausible when Kant offers it because the sensational conditions for experience

belong neither to the realm of the possible nor the impossible.

The important point here is Kant's recognition that it is a contingent fact, stemming from our ignorance, that the domain of possible objects of experience exceeds the actual, and thus from the perspective of the actual includes the (ontically) impossible. Kant cannot push his argument through because the domain of the epistemically possible is larger than the domain of the ontically possible, just as the domain of the logically possible is larger than the domain of the epistemically possible. But if we are to insist that the epistemically possible does and should supercede the logically possible, then we are likewise forced to grant that the ontically possible should supercede the epistemically possible. In order for the inventory of all the possible kinds of objects to be coextensive with the inventory of the actual kinds of objects in the world so that the opposite of the possible is the impossible, the possible will have to be determined by the necessary; and this necessity will have to be stronger than the epistemically necessary since the categories conditioning experience and delimiting the realm of  $P_e$  are epistemically necessary. In short, we cannot construct a theory of modalities which is restrictedly knowledge relative.

10. In the Postulates Kant gives an account of necessity in terms of causal necessity. He says it is not things which are necessary but only their states in accordance with the empirical laws of causality.

We thus know the necessity only of those effects in nature the causes of which are given to us, and the character of necessity in existence extends no further than the field of possible experience, and even in this field is not applicable to the existence of things as substances, since substances can never be viewed as empirical effects -- that is, as happening or coming to be. Necessity concerns only the relations of appearances in conformity with the dynamical law of causality and the possibility grounded upon it of inferring a priori from a given existence (a cause) to another existence (the effect). (A 227-8 = B 280)

We generally grant the conclusions of deductive arguments to be necessary if they result from a valid argument. The ascription of causal necessity to states or events is somewhat different. If the law (of alteration) is necessary, that is, states a necessary truth, then given the initial conditions the conclusion of the argument we deduce, if valid, will likewise be necessary. Kant is correct then in contending that the necessity of states and events is known by way of the relation between those states or events and the laws of nature. On what grounds, though, do we predicate necessity of the hypotheticals that serve as the major premises of causal arguments? A first guess might be that physical laws are necessary because they 'stand under' the causal category which is itself necessary. It is difficult to comprehend how this might be since it has already been pointed out that the categories exhaust themselves in making possible the judgments of ordinary contingent states of affairs. Because the mind always works in such-and-such ways says nothing about the modal status of the judgments and propositions that result from its activity. Kant, perhaps,

wishes to say something like this: we can only know an event (state) to be necessary if it falls under a law of nature; and we should expect, if the argument of the Second Analogy is correct, that all events will be connected by necessary laws. And there are no laws that are not necessary, thus we take all physical laws to be necessary. But how do we know that our laws are truly necessary? Perhaps we do not or cannot know them to be necessary, Kant might answer, but if we discover a rule of nature we treat it as necessary since the Second Analogy tells us that there must be some necessity in nature if knowledge is to be possible. This is certainly the main drift of Kant 's answer and is close to his own self-interpretation in the Discipline of Pure Reason (A 766 = B 794).

Even if Kant is granted his argument, that is, we must hold particular causal laws to be necessary if we are to be able to understand their import, it must be incomplete since the analysis of the necessity of the causal laws will not do duty for particular causal laws. All the categories are necessary in the sense of being indispensable for the possibility of experience. As we have seen this necessity must be interpreted as a conditional necessity, that is (for the causal law); we must believe every event has a cause in accordance with a rule if we are to understand our understanding of nature. We can typify this sort of epistemic necessity as having a functional component and a compulsory-belief component. Firstly, a proposition is necessary if its truth logically conditions (is presupposed by) some or many other propo-

sitions; thus Kant's argument in the Second Analogy that no synthetic proposition (judgment) could be true (made) unless the proposition 'every event has a cause in accordance with a rule' is true. This component of necessity I designate as functional because certain propositions are said to be necessary or necessarily true in order for some other propositions to be true or capable of being coherently uttered; which is to say, propositions are only necessarily true with respect to some particular body of knowledge. And this fits in neatly with what was said about categorial frameworks earlier: just as the causal categorial framework conditions all synthetic judgments concerning material objects, so the teleological categorial framework conditions all synthetic judgments concerning living things. Secondly, the compulsory-belief component of necessary truths underlines their epistemic character. It is not a question of whether X or Y is the case, but rather that we must believe X or Y to be the case if we are to be able to intelligibly believe X' or Y'.

Now whether we interpret the causal principle as saying 'Necessarily every event has a cause in accordance with a rule' or 'Necessarily every event has a cause in accordance with a necessary rule', we shall not be able to fit our theory of epistemic necessity to causal rules. Nor, of course, as was shown earlier, did Kant suppose we could understand the necessity which adheres to causal laws; his intention being to sublate the problematic nature of causal laws to the requirements of the under-

standing (F. Intro, II). Once we suppose our insight into nature incapable of penetrating the grounds of necessity it follows we can only find good epistemic reasons for holding laws as necessary, namely without the assumption that laws hold with necessity we could not form a coherent system of principles about nature, and without this, since it is a correlate of the synthetic unity of nature, we should not understand nature at all.

But Kant's skepticism on this matter is unjustified. His schematization of the category of necessity says: "The schema of necessity is the existence of an object at all times... The schema of modality and its categories is time itself as the correlate of the determination whether and how an object belongs to time (A 145 = B 184)." Kant is thinking here: if God is necessary, then in practice that means He does not come into existence or cease to exist, but exists from everlasting to everlasting. God is an eternal substance. But God cannot be employed to explain the necessity of necessary laws, and Kant is not entitled to his thesis that there can be no mundane, unconditioned necessary substances. Furthermore, Kant's arguments fail to demonstrate why the fundamental forces of repulsion and attraction should not be regarded as such mundane, necessary substances. Finally, with reference to Kant's mention of an "object" existing at all times, it has been argued that substance need not refer to count items, but can refer to mass items, and must do so if the theory of MFNS is to be acceptable, as well as for the argument of the First Analogy to succeed.

Against this background can a theory of the necessity of physical laws be generated? After reading the superbly suggestive chapter on necessary truths in Panayot Butchvarov's The Concept of Knowledge (which needlessly goes too far in the direction of Platonic Realism), I not only think such a theory can be generated, but it could well provide a sound interpretation of the necessity of laws in physical theory.

11. Again, when we say an event is causally necessary we mean that the conclusion of an argument of the form 'If x then y; x; therefore y' is a necessarily true proposition. But since any conclusion to a valid argument will be necessarily true in this sense, then we must mean for causal necessity that the hypothetical premise is itself necessarily true. In the first instance at least, the problem of one event necessarily causing another can be reduced to the problem of legitimately predicating necessary truth of the hypothetical propositions serving as the premise of causal arguments.

The first restriction we should wish to make concerning laws of nature is that they are always true if true at all, and therefore cannot be false, that is, fail to hold. This begins the process of connecting necessarily true propositions with time. While it is surely the case that laws of nature do and accidental generalizations do not support counter-factual conditionals, this does not so much explain the difference between laws of nature and accidental generalizations as mark our intention of taking laws of nature as holding in a way more strongly

than do accidental generalizations. The theoretical motivation behind this intention appears to be this: the world is full of regularities, and critically we are aware that not every regularity observed is a reflection of something about the world as opposed to a peculiar interest we have in the world. But to say we can break up the manifold of experience either in accordance with our interests or in accordance with the way things are is to say some regularities would occur whether we noticed them or not, but others are wholly interest-constituted. The point behind letting laws support counter-factual conditionals is that we regard laws as describing or relating some structural features of the world. The opposite of this being the assumption that the world possesses no internal structure of its own, and every way of breaking up the manifold of experience is interest-constituted. Thus the two classes of regularities are epistemically distinguished by our policy of treating one of them as dictating the flow of experience. But this is just to say, that if some structural feature of experience would have been present at a certain time, then the consequences following from its presence would follow their regular course. If we give up the claim that the world has structural features dictating regularities, then the distinction between interest-constituted and non-interest-constituted regularities becomes hollow, or more properly, circular: accidental generalizations do not support counter-factual conditionals but laws of nature do. Therefore, to admit to a distinction between laws and accidental

generalizations is already to form a commitment to a realistic approach to scientific theories. I shall return to this in the next chapter.

Laws of nature are always true and can never be false. But it is also always true and can never be false that I was born on a certain day in a particular year. This is a contingent fact and might have been otherwise. Therefore if a proposition is to describe something to be always and necessarily true and not what just happens to be always true, then what necessary propositions must describe is something that can never change, is always what it is and cannot be otherwise; they must describe what is immutable.<sup>19</sup> Since laws describe or relate structures of the world, then it is the causal structure of the world which I claim to be immutable. How can this be so, and why must it be so?

Let us begin with the case of substance-kinds. What constitutes a substance as being of a kind is not the persistence of first-order properties, but the ways in which those properties vary under varying conditions; it is the laws of change which mark a substance as being the substance it is. What accounts for a substance-kind's always acting similarly under similar sorts of conditions is the internal atomic structure of the thing (stuff) itself. As long as a thing remains the kind of thing it is it will possess unvarying dispositional properties and powers; it is by reference to those permanent powers that a thing's variation in first-order properties under varying conditions is to be explained. As soon as a

thing loses those powers, either because causes for their dissolution appear or persistent causes for their not changing disappear, it stops being that kind of thing, or what is the same, the laws governing its state-changes become inoperant. Thus that there are laws regulating the state-changes of substance-kinds depends upon those substance-kinds possessing unchanging, permanent structures and dispositional powers (which they possess in virtue of having a particular structure), in virtue of which, again, they are the kind of substances they in fact are. In general, microtheoretical explanations explain why laws at the observational level hold, that is, why observable things obey just those experimental laws. The laws of change for substance-kinds are necessary because of the permanence of the powers a substance possesses when it is of a certain kind.

The explanation of atomic structure by (now competing) theories of sub-atomic structure shows there is a continuity between special causal laws and general causal laws. Therefore the scheme for the explanation of why laws regulating substance-kinds are necessary must be generalizable to the case of the general laws of change. Fundamental theories of motion explain (gravitational laws, say), in general, why things remain the same or change under different conditions. On analogy with substance-kinds it can be hypothesized that if all things obey the same laws of permanence and change then there must be a common inner structure which all things possess, whose powers are permanent. The powers of the fundamental

strata of the world are unconditioned because there are no other powers which condition (explain) their being. Oppositely, if the powers of an entity were variable, then that entity could not be ultimate and therefore could not be employed in explaining the general laws of motion.<sup>20</sup> Naturally, we could not explain why molar objects behaved in accordance with fundamental theories of motion unless we supposed that in some sense molar objects were nothing but particular constructions of fundamental powers. We shall come back to this in the next chapter.

Accordingly, the possibility of there being necessary general laws of change depends upon there being unconditioned powers. Since it is also being hypothesized that fundamental entities are the only real constituents of the universe, then it follows there are no causes which could account for the laws of change, grounded on those fundamental entities, not holding. If we now go on to say, as will be developed subsequently, that the notions of 'persistence' and 'change' form the core of our notion of time, then the unchanging laws of all change in the world are not so much in time as the structure of time itself. The often observed fact that physical theory is written in the tense of the timeless present of pure mathematics is not to be explained by saying science eliminates time, but rather science presents the form or structure of time. Theories are always true because it is their immutability, grounded on the immutability of the powers of fundamental entities, which create the possibility of 'was' 'is' and 'will be' in

the first place. And this much, at least, is in perfect accord with Kant's claim that time determination presupposes permanence: the spatiotemporal relations between all particular things in the universe can be in constant flux as long as the pattern of alteration of those relations is law-governed. The world as an immanent totality is structurally unconditioned.

12. This account of the nature of the necessity of physical theories is, as it stands, imprecise; its detailing would require a firmer grasp of actual physical theories than I possess. However, what was at stake here was a matter of principle, namely, Kant's doubt that the understanding could ever have insight into that which made physical theories hold with necessity. To a certain extent Kant's doubt was disingenuous since he did apparently perceive a connection between there being fundamental forces and there being any causal order at all, and therefore perceived that fundamental forces did function within the metaphysics of nature as unexplained explainers. On the other hand his theory of space was genuine in its attempt to resolve a major theoretical problem and it was because of his theory of space that he could not allow fundamental forces to be 'really' ultimate. If space is not transcendently ideal, then fundamental forces can play the role which Kant must have perceived them capable of playing.

Now since I am incompetent to supply the details of this theory, I feel it is incumbent upon me to at least supply the theoretical impulse behind it, namely, that

it represents the inverse, scientific image of the Platonic account, or at least a version of the classical account, of necessary truths.

Butchvarov says a necessarily true proposition is always true because it describes what is immutable in itself, i.e., unchanging but not because of causes that keep it from changing or because of the absence of causes which the persistence of would require its changing. But how could an entity be unconditioned and immutable in this way? Only, Butchvarov answers, by being nontemporal.<sup>21</sup> Therefore, a necessarily true proposition is one which describes, or is deducible from a proposition which describes, immutable, nontemporal entities. The most natural candidates for such nontemporal entities are universals. And if space and time are relational in nature, "then necessary propositions about them (e.g., they are infinite and infinitely divisible, space has three dimensions, time has one direction, etc. --JB) would describe universals, since a relation would be a prime example of a universal. The stronger the relational theory of space and time, the weaker the suggestion that space and time are entities that are not universals but are described by necessary propositions."<sup>22</sup> Butchvarov also appears to think that necessary truths (about universals) if knowable at all, are probably knowable a priori.<sup>23</sup>

Where we have said necessary truths are about structures or the relation between structures of physical things, Butchvarov claims they are about nontemporal universals. It would appear therefore, given the permanence of the structures to which we have referred, that the difference

between the two views comes down basically to a question of philosophical economy. Consider the following: Is the statement 'Red is darker than pink' necessarily true because it describes a relation (which is a universal) between two nontemporal entities, or because it describes a relation between two physical structures (i.e. the length of lightwaves reflected off of surfaces which atomically regarded have different numbers of electrons on their outer shells, or some such thing)? What if, hypothetically, under normal lighting conditions two extremely similar shades of a certain color were presented to normally equipped percipients, and they all agreed X was darker than Y. However, scientific measurements showed that Y was darker than X. Furthermore, scientists could come up with a reasonable explanation about why all or almost all normally equipped percipients thought X was darker than Y. Such a demonstration requires dropping either regarding the sensible qualities of things as universal, or claiming truths about universals can be known a priori. But our earlier arguments for natural kinds and natural classification should be extended to kinds of cases of property instantiation; therefore it is better to drop the claim that relations between sensible properties of physical things are knowable a priori. It is far more plausible that truths concerning the relations between properties of physical things are ultimately dependent on the deliverances of physical theory.

The same would seem to be the case for the properties of space and time. As we have seen we do not have any

a priori knowledge about the structure of space and time, although we do have a priori knowledge of possible ideal mathematical structures some one of which could be true of empirical space and time. On our account one would expect something stronger, namely, that necessarily the structure of time and space is grounded in the actual kinds of entities there are in the world. As Bennett has pointed out, the question of the infinite divisibility of time might come under the heading of that important addition to modern science of limit-setting hypotheses. Thus he offers this thought experiment to show how time could fail to be infinitely divisible.

Suppose that there cannot be finer temporal measurements than those which measure the distance travelled by an object of known velocity, and suppose also that there are causal limits to how finely distances can be measured. If those suppositions are right, then temporal measurements can be refined indefinitely only if objects can be speeded up indefinitely, and there is evidence that this is causally impossible. That is what lies behind the suggestion that time is discrete, and that an atom of time - a 'chronon' - is the length of time it takes a lightwave to traverse the diameter of an electron.<sup>24</sup>

It is not required to condone this hypothesis in order for us to see that it shows how the structure of time, and therefore whatever necessary truths there are about time, could be grounded on or in the causal structure of the world, that various possibilities and impossibilities are determined causally, and not by abstract entities of whatever kind.

But there is here a question of philosophical economy as well. Why should we say, for example, x is darker than y because of the relations between nontemporal entities, when we can make the same claim in virtue of the structure of the physical world? Logically and from the perspective

of epistemic possibility the world might have been other than it is; but surely it is because the world is physically as it is that lightwaves reflect off surfaces in the way they do, and therefore that certain truths are necessary. And if time is recognized as a pattern of persistence and change, and not as only a smooth and even flow, then we would expect the ground of necessary truths to be in those persistent and permanent structures of the world itself. In general, except for the case of pure mathematical and associated entities which Kant accounts for in terms of constructions, there seems to be no good reason for going beyond causal necessity grounded on the sempiternal, unconditioned powers of fundamental entities for an account of necessary truths relating to physical reality.

13. We thus get the following picture of the six modalities.

Epistemically:

- (i) What is possible is what is in accordance with the transcendental conditions of experience.
- (ii) What is actual is (i) plus sensational affection, that is, objects of judgement.
- (iii) What is necessary are the transcendental conditions of experience themselves.

Ontically:

- (i') What is possible is what is in accordance with the complete system of physical laws,
- (ii') What is actual is (i') plus being at some time and place, which is the same as being a cause or subject of change in accordance with (i').
- (iii') What is necessary is the complete system of physical laws grounded on the unconditioned.

If (iii') is consistent with and in accordance with the dictates of (iii) in ways to be specified in Chapter VI, then (iii) is objectively valid.

Implicit in this view is the assumption that there is some relevant connection between epistemic and ontic modalities. Remember I began by claiming that if transcendental or epistemic principles can place restrictions on the applicability of (what can follow from) the laws of logic, then by parity of reasoning ontic laws should stand in a similar relation to epistemic principles. In fact, I am committed to more than this: it is because there are physical laws which hold with necessity that the epistemic principles can hold with necessity with respect to things. Epistemic principles could of course be necessary as laws of thought, but this claim would be based on and need only refer to the essential (spontaneous) powers of the mind, and would thus be irrelevant to claims about the relations between those principles and physical reality. The logical structure, then, of my claims about the relations between the laws of logic (A), the laws of thought (epistemic principles) (B), and physical theory (C), when these sets of laws are taken to refer to things in the world, runs: A iff B, B iff C; and therefore A iff C. Most persons would find my third proposition distinctly odd, contradicting at the very least the common view that logical and physical necessity differ in kind. Popper, for example, insists that necessity has different senses in logical and physical contexts.<sup>25</sup>

My central reason for believing that the meaning of

necessity is univocal throughout all contexts is that necessity functions in the same way in all contexts.

Principles of necessity are principles of impossibility.

The difference between the three sets of laws or principles is not one of kind, but one of degree. Epistemic principles rule out more possibilities than do the laws of logic, and ontic principles rule out more possibilities than do epistemic principles. It was this line of reasoning I relied on for my criticism of Kant's account of the modal categories.

What arguments does Popper have against the univocal account of necessity? His central argument seems to be that a statement is logically necessary if and only if it is deducible from a statement function which is satisfied by every model, that is, a statement function which is true in all possible worlds. In opposition to this he thinks a statement is naturally necessary if and only if it is deducible from a statement function which is true in all possible worlds that differ from ours, at most, with respect to initial conditions. This argument is valueless (or circular) since it must tacitly assume that a possible world is just a world in which all the laws of logic hold. In other words, Popper must be relying on his naive intuition that we can conceive of a world whose logic is the same as ours but whose physical laws are different -- same logic but different structure. Surely though it is this notion of 'conceiving' which is at stake here. Logical necessity, on my account, rules out the least and therefore has the most number of statements compatible with its

laws. Popper's possible worlds account simply trades off on this fact: we cannot conceive of a world in which the laws of logic might fail, therefore the laws of logic hold in all possible worlds. We can conceive of structurally different worlds with different physical laws, therefore logical necessity is stronger than physical necessity: the laws of logic hold in more possible worlds. The modal term 'possible' in 'possible worlds' is the source of the difficulty, for whatever you make a touchstone for a world to be a possible world will likewise be the touchstone for what is really 'conceivable', i.e. possible. But circularity is not Popper's only problem. Let us take a naively realistic attitude towards other possible worlds. There exist an indefinite number of other possible worlds, and in all those other possible worlds the laws of logic are valid, and further, in some of them the laws of physics (the true ones, whichever they are) of this world don't hold but some different ones do. Now in order to make his argument work what Popper must show is that the reasons why the laws of logic hold in all these worlds and the reasons why the laws of physics hold only in some but not others are different. But if it is not analytically true that the laws of logic hold in all these possible worlds, then it will be because of the nature of the abstract entities which populate them; that is, the laws of logic will be naturally (albeit abstractly) necessary, as of course will be the physical laws of these different worlds. In other words, even if we accept Popper's possible worlds argument, it alone gives us no reason to believe that logical

and physical necessity differ in kind.

In fact, as Popper readily admits, the real reason he thinks there is a difference between logical and physical necessity is that the univocity thesis entails essentialism, which (for Popper) is the doctrine that there exist ultimate explanations.<sup>26</sup> Popper does not have, however, an argument against there being ultimate explanations; what he offers instead is an argument against the value of assuming there are ultimate explanations when that thesis is joined with the thesis that scientists can establish the truth of their theories beyond reasonable doubt. And his argument against this view is that it inevitably leads to dogmatism, and thus serves as a hindrance to the growth of knowledge. Besides being psychological and thus utterly irrelevant to the issues at stake, Popper's argument is false. If I am an essentialist I can both believe that a certain theory is true (even beyond reasonable doubt) and that there are still deeper strata of nature which are the real unexplained explainers of the system. That is, nothing guarantees that what we take to be an unexplained explainer is an unexplained explainer, and therefore even if we are committed to essentialism we can heuristically treat any explainer as one which is in need of explanation. On the other hand, the realism which is usually attendant to essentialism would prompt us to look for the physical basis of any effect, and would thus lead us to go beyond ordinary predictive successes.

Conceivability is bound to play havoc with our

intuitions about necessity. Popper thinks he can conceive of a world whose laws are different from those holding in this world. He cannot conceive of a world in which the laws of logic are not valid. Therefore there must be some sense in which the laws of physics are contingently or conditionally necessary while the laws of logic are unconditionally necessary. I have stated (i) that this procedure begs the question since it cannot generate an independent criterion for a possible world beyond that of a world in which all our laws of logic are valid; and (ii) that when Popper's argument receives a non-circular reading it turns out that the difference between conditionality and unconditionality is one of degree and not one of kind. Another way of putting my second argument would be to say that if it is not analytically true that the laws of logic are valid in all possible worlds, then it will only be contingently true that the laws of logic are valid in all possible worlds. As should by now be evident, what Popper lacks is an account of why either the laws of logic or the laws of physics are necessary. It is interesting to note that a related problem arises for Leibniz. For him possible worlds are maximal sets of mutually compossible complete individual concepts, where complete individual concepts are maximal sets of compatible simple attributes. Leibniz' problem is that he cannot explain how two such concepts can fail to be compossible.<sup>27</sup> If we are unable to see how P can exclude Q, then we do not understand how anything is incompatible with anything else; but this is what the

problem of necessity is, to see how certain things being the case rule out certain other things even possibly being the case.

Kant's failures, or at least the failures attributed to him, should have taught us a lesson in this regard. He thought we could not understand what it would be like for certain principles not to hold of our experience of the world; the possibility of these principles not holding was inconceivable to him. At the very least, though, other thinkers have believed that they could conceive of what it would be like for these same principles not to hold of our experience. Why should not the laws of logic be in the same position as Kant's categories? Deviant logics, and the problems surrounding quantum logic in particular, have shown at least that the situation of our logics may be something like the case, for example, of Euclidean geometry in Kant's system. Although I am not prepared to argue the point here, there does not seem to be anything implausible in the suggestion that logic is empirical. Why should we not say, following Aristotle, that the principle of contradiction specifies that no thing can both be and not be in the same respect at the same time? Why should it not be because of the nature of things that contradictory predicates cannot hold of them at the same time rather than this being true because it is a law of logic? Indeed, if inconceivability is not a criterion of necessity, then if the laws of logic are necessary, then they will have to be natural necessities. This follows from a recent argument of Fisk's.<sup>28</sup>

As a law of logic we have  $Fa$  implies  $Fb$  is not to be denied when  $\text{not-}Fa$  is affirmed. Fisk urges against the view that the laws of logic are non-natural necessities the following dilemma: "If, on the one hand, the terms are merely coined (the logical connectives being contextually defined through the use of truth tables, say,  $--JB$ ), then there is no basis for the truth, or even the falsity, of the resulting analytic propositions. If, on the other hand, the terms have significations, then if the analytic propositions expressed with them are true, their truth is not due to meaning rules. In either case, analyticity does not imply truth, and hence it does not imply necessity."<sup>29</sup> The first horn of the dilemma is backed up by the argument that in giving this rule we have only agreed to say that if  $\text{not-}Fa$  is affirmed we won't deny  $Fa$  implies  $Fb$ . Agreeing to say  $Fa$  implies  $Fb$  is true under certain conditions does not automatically mean that the conditional is true under those conditions. Convention is not a real ground for truth. Kant's own concept empiricism is telling against this much of the analyticity interpretation of logical truth. "If knowledge is to have objective reality, that is, to relate to an object, and is to acquire meaning and significance in respect to it, the object must be capable of being in some manner given. Otherwise the concepts are empty; through them we have indeed thought, but in this thinking we have really known nothing; we have merely played with representations (A 155 = B 194)." To defend the

second horn of the dilemma is a far more complex matter, and I shall not attempt it here since it treads on all the thorny issues surrounding the debate about analytic and synthetic. So far as I am aware no one has come up with a good argument to show that rules of meaning can generate ontic truths, which is just what is required to make analytic truths necessary. Of course, it was a mistake to begin with to believe that rules of meaning were truth generators. But once the notion of rules of meaning as truth generators is out of the way there is no reason to believe that neutrally analytic truths can not be falsified. If 'all F are G' is an analytic truth, we could still discover that, in fact, the references of 'F' and 'G' fall outside one another, that is, that the real extension of 'F' was not contained in 'G'.<sup>30</sup>

It does seem to me that if the laws of logic are analytic, then they are not necessary; they simply inform us of what follows from what once a given system of rules is accepted. This is the case, for example, in natural deduction interpretations of logical systems, where the central notion is that of logical consequence (rather than validity), which is defined or explained in syntactical (rather than semantical) terms. If the laws of logic are necessary, then they might well be natural necessities, although I am unable to say what sorts of complex properties entities would have to possess in order for the laws of logic to be necessary in this sense. My goal here, however, was

not to evaluate the real status of logical truths. Popper intuitively felt that the laws of nature were only conditionally necessary and not unconditionally necessary like the laws of logic. The purpose of my argument here was to give some intuitive plausibility to the idea that the laws of logic need not be unconditionally necessary, in Popper's sense of the term, either. Once this is accepted, then there is no reason not to believe that logical and physical necessity are of the same kind.

One of my reasons for urging this weakening move is that my own account of necessity cannot support unconditional necessities in the same sense in which Popper thinks the laws of logic are unconditionally necessary. Physical laws are necessary because they describe immutable features of this universe. Ultimately these laws depend on the existence of unconditioned entities. The powers of the fundamental stratum of the universe are unconditioned only in that there are no other powers which could condition them. When we come to discuss the problems of substantial change, alteration, and permanence I will argue that the universe is really stratified, and therefore that non-ultimate entities must be capable of supporting necessary laws. That is, I shall show that the difference between permanence and change need not be absolute in order to account for the possibility of physical laws and lawlike behaviour, and therefore that natural necessity yields a 'weaker' set of relations between entities and events

than is normally supposed.

14. Once we see how logical necessity can be a species of natural necessity, there is less temptation to conflate the differing notions of objective validity which surround 'epistemic' necessity.

A concept or principle can be epistemically (transcendentally) necessary: (a) if it is a presupposition for us to continue to think and speak as we do now; (b) if it is a function of an essential (spontaneous), generic feature of our minds; (c) if it creates the very conditions under which we can know anything whatsoever. Theory (c) is the one Kant apparently held, and is analogous to the theory which separates logical and physical necessity. It explicitly makes principles of thought into ineliminable truth generators. For its objective validity involves the strong sort of idealism we have been attacking throughout. Whether or not it reduces or should reduce to (b), as Heidegger suggests but Wittgenstein, for example, would deny, is an open question. Theory (b) does reduce epistemic necessity to a form of natural necessity; epistemic principles (or concepts) are necessary as thought functions. They are essential predicates of the mind or are directly grounded on essential predicates of the mind; in either case they represent generic powers of the mind. They are not necessary predicates of the objects of thought except in so far as those objects are considered as objects of thought and\* as nothing more. Objective validity with respect to (b)-type concepts would involve

making the empirical discovery that such concepts were indeed representative of generic powers of the mind. Chomsky's program, perhaps, typifies a search for such concepts. The possession of concepts in the sense of (b) entails but is not entailed by epistemic principles in the sense of (a); and may, but does not necessarily, entail the (c) version of epistemic principles.

In the first case, if a principle represents a generic function of the mind, then whether it is recognised or not it is always shaping our cognitive responses to empirical situations. We may at a given time recognise (b) concepts only in an (a)-like way, not apprehending their rootedness in the structure of the mind. Alternatively, (a) concepts can be mistaken for (b) concepts, and on the basis of this mistake may be treated like (c) concepts. But being a (b) concept does not entail being a (c) concept; objects may actually possess just those features that the structure of our minds requires them to have. For example, this eventuality might be a result of the evolutionary process. Again, (b) concepts might not pick out features of objects as such. Such a pre-established lack of harmony between mind and reality would commit us to (c) and idealism. This, of course, falls out as a natural consequence of the transcendental idealism/transcendental realism dichotomy. If the natures of things are inadequate to the task of grounding truth, then truth will have to be grounded within our modes of cognition. Truth and the modalities would then be relative to some

set or system of principles, i.e., those principles and what was deducible from them would be counted as necessary, what was compatible with them but not deducible from them would be possible, etc.

The interesting and important case here has to do with (a). These concepts are weakly objectively valid if they are presupposed by a conceptual system; they are strongly objectively valid if they do in fact pick out features of empirical objects. In what sense are (a) concepts necessary in virtue of their being weakly objectively valid? Is there a unique sense of necessity for epistemic concepts and/or principles as such. If my argument concerning physical and logical necessity was sound, then it would be a mistake to think that there existed a unique kind of necessity called 'epistemic' or 'transcendental' necessity. The usual ground for calling a concept epistemically necessary is that we cannot conceive of the opposite of what that concept legislates as obtaining, e.g., we cannot conceive of what would count as an event without a cause. But we have already seen the dangers involved in linking conceivability to necessity. Our powers of imagination are not reliable guides to what is really possible or impossible, and therefore should not be employed as supplying even necessary criteria for what is necessary.

As epistemic necessity is imputed to (a) concepts. To say that a concept or principle is epistemically necessary is to say we hold that concept or principle to be incontrovertible. The imputation of necessity to such

concepts tokens their special place in our conceptual system, i.e., like physical laws themselves no isolated empirical happening can overthrow them. And the reason for this is that we do, in fact, take it that these concepts designate essential, naturally necessary features of objects or naturally necessary features of relations amongst objects. It is here that there exists a dis-analogy between logic and epistemology. By way of the natural deduction method we can treat logical systems in a wholly formal manner. Epistemic notions are not open to such treatment since they are at least putatively tied to empirical items. Even when they are not naturally necessary as either generic features of the mind or correspond to generic features of objects, epistemic notions have a normative character in accordance with which we evaluate empirical items. But this normativeness requires explanation and justification. Even supposing we discovered these concepts to be generic powers of the mind, we could still question whether they corresponded to generic features of objects, or, at least, were summa genera of empirical concepts representing generic features of objects.

It might appear that this claim runs contrary to the catalogue of epistemic modalities just put forward, and thus contrary to the idea that there is a progress from epistemic to ontic modalities. To argue thus would be to overlook the problematic character I attributed to the epistemic modalities. Their problematic character, it now turns out, is a result of their

ambiguous status as modal predicates within an epistemic framework, or, what is the same thing, their ideality as epistemic notions. To say that the possible, actual, and necessary are ideal as epistemic notions is just to say that these notions are not supported by matters of fact about the world, but by our ways of organizing and evaluating matter of factness itself. For whatever reasons, we think the world must have or ought to have such-and-such an empirical form; that with respect to the way the world ought to be (if it is to be intelligible to us) only certain sorts of states of affairs can happen, and that, therefore, what does happen must be in accordance with what can happen. All this is presupposed in the activity of judgment.

What does it mean to say that the categories are presupposed and thus ideal in the activity of judgment? Consider: What is observed in a normal empirical perception is a 'this- $\phi$ '. We judge 'X is  $\phi$ '. More precisely, we would verify the foregoing judgment by noticing 'This-here-&-now- $\phi$ s'. Where the 'here-&-now' makes tacit (and necessary) reference to possible 'there's-&-then's'; the 'this' to a continuant that normally, and in a certain respect necessarily, will have 'there's-&-then's'; and the ' $\phi$ ' to one amongst a number of predicates holding of 'this', and which pertains as a (necessary) consequence of some other matter, and thus some other 'there's-&-then's'. As Sellars has rightly pointed out, space and time as forms of intuition, like the categories considered as the

logical functions of a judgment, indicate what is implied by -- the conditions for and the cognitive significance of -- the representation of 'thises' in perception. The logical power of demonstratives (and of tensed statements as well) involves essentially the manner of occurrence of the objects to which they refer in space and time, which is just to say that "the conceptual structure of space and time is built into their logical powers."<sup>31</sup> The categories are just second order representations of these logical powers.

Once we have grasped the ideality of judgment, once, that is, we have understood the sense in which the judgmental framework is non-explanatory in nature and intention, there exists no reason to believe that questions of principle ought to be decidable with respect to it. To employ one of my earlier locutions: questions of principle are submerged, presupposed, and generally not thematized as direct problems for judgment. Modal progress is a result of thematization of the presuppositions of ordinary knowledge. On the basis of modal progress we discover what is possible and what is impossible. We often can conceive of something being the case which contradicts the laws of nature. But that does not show that the laws of nature are not naturally and unconditionally (given the framework of permanence and change) necessary, or that, therefore, what we conceive to be possible is really possible. That the epistemic modalities should seem to form a separate modal family as opposed to being recognized as

as underdetermined versions of the ontic modalities results from our continual, if diminishing, ignorance of what is possible and impossible, and thus from our need to continually anticipate what we think ought to be possible and impossible.

15. About this Kant was correct: our only access to what exists is through what is known. Because what exists at any given time extends beyond what is (theoretically and in principle) known, being cannot be reductively related to knowing. This implies that we must admit the existence of things in themselves: a world existing independently of us and our ability to know it. Furthermore, from the necessity of postulating the existence of things in themselves it follows that we can fail to gain complete knowledge of the world. The idea that we can fail to gain complete knowledge of the world must be Ideal: the idea of failure would be empty unless we had an idea (or: Idea) of objective truth. The idea of complete objective truth concerning the nature of physical reality is an ideal conception constructed through an examination of what must be involved in our knowing about things, and therefore what a complete science would tell us if it was in accordance with our anticipations of nature. And this implies that categorial systems must do two things: first, they must explicate the conditions and limits of rational discourse about things; second, they must be capable of being construed as the cores of metaphysical research programs for science, that is, as

presenting a rational defence for some highly aim-oriented research program, for it is only through their connection to a theoretical program, a program for scientific action if you wish, that they can even hope for vindication.

One of Kant's great insights was to argue that the experience and knowledge we have do not make sense without certain presuppositions. Generally, he attempted to inject these presuppositions into experience; but the price of this is the claim that nothing exists outside the concept (knowledge) -- which is too high a price for the metaphysical security it affords. The notion of a 'presupposition' for the possibility of knowledge perfectly captures the middle realm we require between knowing and being. What must be presupposed about reality for the possibility of knowledge is what we cannot rationally conceive not to be true if we are to make sense of the knowledge we do appear to possess. But because we must presuppose something if we are to understand our understanding of reality does not entail its existence. There is, therefore, a complex interplay between the progress of science and the presentation of presuppositional arguments relating to the conditions of knowledge, and thus the limits of rational discourse. Philosophy must limit and guide science -- this follows from our argument concerning the aims of science in Chapter IV -- while science can vindicate philosophical programs, and unmask philosophical pretensions. Aspects of this dialectic will be rehearsed below.

The idealisation of the conditions for knowledge with respect to the unconditioned forms reason's own picture of objective truth. In fine, the ideal of complete knowledge is that all epistemically possible knowledge be capable of complete cognitive determination in accordance with empirical laws and principles. Thus the implementation of the idealisation of (iii) with respect to the unconditioned is (iii'); what is presupposed by (iii) is determined in detail by (iii'). Only when the possible is determined by the unconditionally necessary (iii') can we construe the opposite of the 'possible' as wholly impossible.

Now central to this contention is the thesis that the object of judgement is an ideal object because it is judged solely with respect to our powers of judgement. No matter how we interpret the complex process of identifying and discriminating (synthesizing) experiential manifolds, the point remains that features of things constrain and guide but do not determine judgement. Whatever is wrong with the theory that words or concepts are labels as a theory of language or judgement, which is nearly everything, it contains the sound point that ordinary empirical language is identificatory in nature; the manifold of experience is given and we impose a grid of distinctions and discriminations upon it. Features of objects at most constrain us in the ways in which we can discriminate the manifold of experience. In this light the imposition-  
al theory of the categories has some justification. Locke,

however, suggested that a different system of 'describing' the phenomena would be to deduce the effects of things from their real essences. The only way this can be done is to discover the 'rules' connecting different appearances in the things themselves. When we describe the properties of things in dispositional terms we are claiming the rules connecting the phenomena are in the things themselves. It does follow then that to view things with respect to the unconditioned (dispositional) powers of the universe is to view them from a perspective different ~~from~~ that of judgement. It is to view them with respect to their real ground.

I have argued that the categories require and can receive vindication. In order for this to be a comprehensible procedure we must accept a reversal in the relationship between science and philosophy: it is the progress of science which fulfills the task of securing the objective validity of categories and empirical concepts, not idealism. The proper movement here should be, not from transcendental realism (Locke) to transcendental idealism (Kant), but from conceptual idealism to transcendental realism; from the categories considered as conditionally (for the possibility of knowledge) and hence only epistemically necessary, to the categories considered as grounded in the metaphysically necessary structure of the world; and finally, from the object considered from the perspective of judgement (= the ostensible physical object) to the object considered from the perspective of the unconditioned, i.e. a complete physical theory (= the thing itself).

## Science and Ontology

## A. Foundations and the Blueprint for Science

1. Science is teleological; it is an essentially goal-oriented enterprise. It must presuppose the existence of things in themselves for its possibility, and it has knowledge of them from the perspective of the unconditioned for its aim or goal. Knowledge of the unconditioned would be knowledge of some one principle (theory) under which all others could be unified. This one principle would show, for example, that all powers in the universe were equivalent to one and the same moving force binding the universe into One. This unity in principle of the universe would supply a collective unity of experience, thus complementing and fulfilling the expectations of the transcendental unity of apperception which supplies and secures a distributive unity of experience.

Unchastened Kant's categories present a reification of the Newtonian universe grounded in the powers of the understanding. Critically read they form a blueprint for a future science based on the results of Newtonian theory. The reification process is achieved through the idealizing of space and time, making them contributions of the subject to experience. Now since the relational categories are supposed to specify the pure characteristics of spatiotemporal manifolds it follows they also are injected into experience. Although Kant admits that things in themselves would apart from our understanding conform to 'laws' of their own, he must suppose these 'laws' to be non-causal in kind. A consequence of this purification

of unsynthesized manifolds is Kant's form/matter distinction. Space and time as forms of experience become separated, with respect to their origin, from their material content. If it is a mistake to idealize space and time in the way Kant does, then the form/matter distinction as he draws it must be equally mistaken. Once a sharp distinction between the formal and material features of experience is removed and all the categorial features of experiences are interpreted regulatively, then the categories as a whole can be regarded as a blueprint for science.

All the categories are regulative concepts anticipating in formal terms the structure of experience. To suggest they jointly form a blueprint for science implies that their import resides in the way they restrict or can restrict the kinds of scientific theories which are acceptable if we are to have a comprehensive and intelligible account of the nature of the universe. For example, we previously urged that no fundamental theory could be of the action-at-a-distance variety, not because action-at-a-distance was a priori impossible, whatever that would mean, but because we could not understand such a theory: we would always want to know what happened in the empty space between  $x$  and  $y$  which caused  $y$  to respond to  $x$  in the way it did. When a quantum theorist tells us that according to his theory 'nothing' happens in this empty space to relate  $x$  to  $y$ , then given our blueprint we can respond that his theory is unintelligible; it cannot be a realistic description of what happens because to describe in a comprehensible fashion relations between objects in

causal terms is to explain how one effects the other. To claim x effects y and nothing happens in the space between them to transmit a signal from one to the other is to present a mystery in the form of a law of nature. The form of representation employed by the quantum theorist is not one we can understand. Therefore we are committed to saying that either quantum mechanics is false, or it is of only instrumental value for the making of predictions, or it is not fundamental (e.g., there might be a level of reality below the quantum mechanical, as Bohm has suggested). Our blueprint can guide inquiry; give us a critical space in which we can separate 'nature' from any given representation of it, and also, therefore, a purely conceptual space in which we can evaluate given theories.

Given our blueprint, what we are searching for is a rational theory of the universe. We are not concerned, in the first instance at least, with category-breaking events: things going clean out of existence, uncaused happenings, what have you. Such events are or would be affronts to rationality, but by the very nature of the case, just because they were one-off episodes that slipped our cognitive grasp, there exists nothing which could compel us to admit they happened as reported; and more importantly, even if we decided or agreed to say that just this once something happened without a cause, it would not pose a serious threat to our comprehension of the world. But it is a different matter when a purportedly fundamental theory embeds in its structure category-breaking elements, for this implies that in principle we do not

understand nature or science -- we cannot quite understand what we think we are saying. It is not irrelevant that categorial notions and causal statements have the common property of not tolerating exceptions; just as wholesale exceptions to causal laws shake physics to its foundations (when it bothers to notice them), so the wholesale occurrence of exceptions to our categorial concepts would shake our whole conceptual scheme to its foundations.

We can only conceptually legislate against exceptions to principle; existential matters are not in our control. The conclusion to draw here is that disputes about categorial concepts are rationally undecidable on the philosophical level, that is, at the level where we can do no more than argue principles and supply instances and counter-instances. And it does nothing for our sanity or rationality when the universe slips out of joint to say that none of it is happening, our concepts will not tolerate it. But we can refute indeterminism in principle by coming up with a ('true') theory which deterministically explains heretofore indeterministically described events. If our categorial concepts really are rationally indispensable, then our only hope for vindicating rationality is in scientific inquiry; saying what 'must' be so without doing anything about it is of no use to anyone.

The philosophical 'moment' is not for all that dispensable: science and history can only say what is, not what ought to be, and not everything that is is equal from the perspective of what ought to be. If a theory can

fail to be intelligible from the perspective of a given ideal of representation, then representational ideals must remain independent citizens of our conceptual world. Being finite beings our spontaneous powers of understanding are limited, and therefore can only be satisfied in a limited if indefinite number of ways. If science is one of the ways in which we fulfill ourselves as rational beings, then science ought only to pursue paths which can play a part in the growth of rationality. Categorical systems are indispensable guides for rational scientific inquiry. The historicist and empiricist can evade this result by denying that we need to presuppose anything about the universe in order to account for our present knowledge, and therefore all representational ideals are equal. But this implies we never have any but pragmatic (non-cognitive) reasons for choosing one theory over another, which is historically false. And the next step in the historicist's argument begs the question, namely his claim that choices between theories based on representational ideals really employ only pragmatic criteria.

We cannot give up a priori rational debate on the aims and rationality of science without forfeiting the rationality of science itself. We cannot remain at the level of a priori debate for only in the progress of science can we hope for a resolution to some of these debates.<sup>1</sup>

2. Kant claims transcendental philosophy replaces general metaphysics and thereby generates a new conception

of metaphysics and so ontology.

Metaphysics, in the narrower meaning of the term, consists of transcendental philosophy and physiology of pure reason. The former treats only of the understanding and of reason, in a system of concepts and principles which relate to objects in general but take no account of objects that may be given (Ontologia); the latter treats of nature, that is, of the sum of given objects (whether given to the senses, or, if you will, some other kind of intuition) and is therefore physiology - although only rationalis. (A 845 = B 873)

This is a suspicious claim since in order to treat of nothing but the understanding transcendental philosophy would have to know what concepts the understanding has at its disposal. But without intuitive insight into the powers of the mind the most transcendental philosophy can do is say certain concepts are indispensable for thought. The only source of a catalogue or possible catalogue of indispensable concepts is science. Previous philosophical systems might contain such a catalogue, but the concepts found there would still have to be relativized to scientific theory since, as we shall see in a moment, given scientific theories present the starting point for rational physics. Rational physics represents a second 'approach' or 'determination' of objects of experience from an a priori perspective. The whole idea of a rational physics is fraught with difficulties which call into question the nature of Kant's separation of the a priori from the a posteriori, and thus his separation of transcendental philosophy from rational physics, and thus once more his form/matter distinction. Just as I have argued it is false

that the moral law derives nothing from our acquaintance with anthropology (i.e. the nature of human thought, desires and will), so it seems to me false that transcendental philosophy derives nothing from acquaintance with physics. The 'space', 'time' 'causality' concerning us relate to the way these concepts determine physical objects. The real difference between categorial and empirical concepts will turn out to be one of degree only, but the reasons for and nature of this stratification cannot be as Kant describes it. Let us begin by taking a sympathetic look at the general purpose of MFNS.

The task of rational physics is to make available certain concepts to science such that these concepts (e.g. matter) are known a priori to have legitimate application to experience (MFNS, p. 472). The a priori aspect of metaphysical adjudication refers not to the question of a concept's application to experience, but to the question of the legitimacy or propriety (in a sense to be specified) of that application. Similar in this respect to the issues surrounding transcendental proofs, the central problems here concern the elements with which metaphysical demonstrations are occupied and the kind of legitimacy which such demonstrations might provide.

Kant says "the fundamental determination of something that is to be an object of the external senses must be motion, for thereby only can the senses be affected (MFNS, p. 476);" and therefore natural philosophy (or rational physics as Kant calls it) will be a pure doctrine of

motion ('pure' because not empirical). Science and pure rational physics are both concerned with the sum of given objects; but why the ultimate determination of this set of objects should relate to motion is neither clear nor obvious. Without a full defense as to the reasons for his selection of motion, and without any evidence to the contrary, it seems reasonable to conclude that Kant's choice of motion was dictated by the fact that he wished to provide a foundation for Newton's laws of motion, they being the fundamental laws which bind our universe into a whole. Other concepts discussed in MFNS relate either to those directly involved in Newton's laws, or are subsidiary concepts of those directly involved in Newton's laws which are otherwise important for mechanics or to a mechanical view of things, e.g., Kant's account of density, cohesion, friction, etc. in terms of fundamental forces show how all causal explanation can be reduced to cases of efficient causality. Of course, there is also the happy coincidence that motion, Newton's laws, and the sum of all given objects (= those which can affect our senses) overlap with one another.

Motion, then, is the central empirical concept which through metaphysical construction becomes legitimized in MFNS. Exactly why motion should be taken as an 'empirical' concept and how it receives legitimization will be discussed below. What must be emphasized at this juncture is the ineliminable arbitrariness (from the transcendental perspective) that surrounds the choice of empirical concepts that are to be analyzed and legitimized in a pure doctrine

of nature. The arbitrariness is a consequence of and logically coextensive with the gap that exists between mind and the world, between the powers of the understanding and what is finally determined through those powers. Which concepts form the center of a pure doctrine of nature should be largely dependent upon which scientific concepts are taken at a given time to be pivotal in our highest level (deepest) theories. No strictly a priori considerations can be sufficient for the choice of a central empirical concept or cluster of concepts needing metaphysical demonstration; the best guide, and the only possible guide is empirical science itself, since it is the concepts which belong to and constitute it which benefit from metaphysical construction. If science is progressive then there can be no final pure doctrine of nature, that is, ontology of the truncated world, until there exists a final and complete physical theory, the legitimacy (not the truth) of which can only be adjudicated through metaphysical demonstration. If science changes then so must pure rational science. For Kant it is special metaphysics and not his general metaphysics (MFNS, p. 477) that is inextricably linked to Newtonian science.

The categories of quality and quantity require for a complete determination of an object that the concepts applicable to it must be mathematical, and mathematical concepts are all capable of being constructed. Because a construction is made in pure intuition the 'possibility'

of the concept it corresponds to can be determined prior to any empirical instance in which that concept is instantiated. Rational physics legitimizes scientific concepts by showing how they are possible (MFNS, p. 470); it is the showing of the possibility of a concept that is the a priori element in natural philosophy.

Therefore, in order to cognize the possibility of determinate natural things, and hence to cognize them a priori, there is...required that the intuition corresponding to the concept be given a priori, i.e., that the concept be constructed. Now, rational cognition through the construction of concepts is mathematical. (ibid.)

Scientific laws and concepts receive metaphysical licence when they are shown to be constructible in purely quantitative terms under the guidance of the categories. The construction of a concept in pure intuition does not entail the loss of empirical status for the concept in question. Motion, for example, is an empirical concept in that there are numerous possible quantitative laws that might apply to systems of moving bodies; which laws receive confirmation or disconfirmation remains a wholly empirical matter.<sup>2</sup> (Could we not substitute here 'causality' for 'motion', and 'systems of causally interacting bodies' for 'systems of moving bodies'?) A strongly confirmed law the concepts of which were incapable of being metaphysically constructed (the constructions in question are mathematical, but they 'follow' the guidelines set by the categories, hence I have chosen to call these constructions 'metaphysical') would, in Kantian terms, be said to be illegitimate -- we do not understand the concepts involved or how they fit

into an empirical framework of, e.g. moving bodies --; in contemporary terms we should say, perhaps, that we could only produce an instrumentalist interpretation of the law in question. Likewise the opposite may be the case in a Kantian framework; though the concepts of a given theory are discovered to be constructible, the theory can still logically be falsified. Other theories will contain other concepts and, more importantly, empirical concepts are capable of interrelating in various and sundry ways; for example, where  $x$  may equal  $yz$  in one theory, it could be a function of  $yb^2$  in another. Construction, then, guarantees only the intelligibility of a theory. Note that this is weaker than our notion of theories being 'evaluated' with respect to a blueprint; 'intelligibility' is 'constructibility' thus far.

Kant could not claim to be offering a foundation for Newtonian physics if he only required that scientific concepts be constructible and hence mathematical. That the constructions offered are done in accordance with the categories entails that in meeting the specifications of each category the constructions as a whole meet the requirements of the Principles as a whole, thereby indicating that the law(s) in question completely determine all the conceptual moments for the concept of an object in general. Therefore what holds for the concepts that belong to a theory applies equally and in the same fashion for the theories themselves. The Analogies, which range over Newton's laws of motion, are not treated in MFNS as transcendental principles for the possibility of experience

in general which would allow us to comprehend Newton's laws as imply special or empirical versions of them; rather, because of their transcendental status we can use the categories to show the propriety of Newtonian physics by inserting or injecting them into the mechanical situation which Newtonian theory provides. In special metaphysics the scientific laws in question are prior as the logical matter of the inquiry; the transcendental status of the categories permits them to be employed as standards of adequacy: metaphysical adequacy here replacing abstract, formal criteria for rationality, a move necessitated by the Kantian shift from formal to transcendental logic. The different ways of treating the Analogies in the context of MFNS has been clearly laid out by Buchdahl.

The section on 'Mechanics' corresponds to the Analogies of Experience in the Critique; and the general method applies once more, viz. an 'application' of the relevant categorial concepts to the concept of 'matter'. Moreover, if the principles of the Analogies are synthetic a priori, so will be the theorems of the Mechanics, with the proviso that the concept of matter is an empirical concept. The sole question is whether the general principle thus applied is a priori qua transcendental presupposition of experience in general or whether its logical force is a priori only as a postulate antecedently ('a priori') injected into the mechanical situation: the result being synthetic a priori only in the sense that the general principles (be their foundations what they may) are applied in 'constructive' fashion.<sup>3</sup>

Only the second alternative, Buchdahl believes, is open to Kant. By taking the Principles as a whole to be definitive in formal terms of the concept of an object in general we can account for the point of these metaphysical applications of transcendental categories; there-

fore we can take the significance of the metaphysical theorems generated in the Mechanics (chapter three of MFNS) to be just the existence of the theorems themselves, i.e. as mediating between the pure a priori categories and Newton's empirical laws. A failure in being able to generate such a theorem would be indicative of a 'gap' in the theory in question, showing that it had not completely determined the 'sum of given objects'.

3. In general, the Kantian theory of foundations seems a plausible account of how we might check the adequacy (against the categories) and intelligibility (through construction) of a scientific theory. Nonetheless there is reason to doubt that Kant can prevent a limitless extension of the a priori determinations of empirical objects, and therefore that Buchdahl's two methods of providing foundations can be firmly separated. Thus we find Kant stating in the Preface to MFNS that

only that whose certainty is apodeictic can be called science proper; cognition that can contain merely empirical certainty is only improperly called science. That whole of cognition which is systematic can therefore be called science, and when the connection of cognition in this system is a coherence of grounds and consequents, rational science. But when these grounds or principles are ultimately merely empirical, as, for example in chemistry, and when the laws from which reason explains the given facts are merely laws of experience, then they carry with themselves no consciousness of their necessity (are not apodeictically certain), and thus the whole does not in a strict sense deserve the name science. (MFNS, p. 468)

The import of the intelligibility function of mathematical constructions plays no part in this passage. Kant's charge against chemistry does not concern the place of

mathematical reasoning in the chemistry of his time, but the fact that the "grounds" and "principles" of chemical systems were "merely empirical", that is inductive generalizations. The superiority of Newtonian science over chemistry must then lie in its having "grounds" or "principles" which are not empirical, which is to say, the theorems of MFNS are "a priori natural laws" (ibid.). But this presents a problem: as such and on their own the laws of Newtonian theory are not apodeictically certain but when they are placed in a system they apparently receive certainty by way of the a priori principles which ground them. Perhaps this result can be avoided by saying only the proofs and theorems of MFNS make up the system of science. But then how do the theorems of MFNS provide foundations for Newtonian theory? Buchdahl's theory of 'metaphysical injection' by constructive methods does not seem to be so much false -- it does appear to describe Kant's actual procedure in MFNS -- as beg the question at issue. Given the nature of Newton's theory and the structure of Kant's system these problems cannot be solved.

The first recognition required of us is that Newton's system is not in any precise sense empirical. The terms of Newtonian theory do not individually stand in a one-to-one correlation with discriminable features of empirical phenomena. Each of the various basic terms used by Newton are implicitly defined by their relations to one another in the context of the laws themselves.<sup>4</sup> Not only do the concepts of 'mass', 'acceleration' and the like fail to pick out in any straightforward fashion features of

experience, but the general laws themselves, like  $f = ma$ , are not properly laws at all, but rather law-sketches or law-schema. To apply them to particular cases they must be transformed. Thus in the case of free fall,  $f=ma$  becomes  $mg=m \frac{d^2s}{dt^2}$ . And the connections between the forms  $f=ma$  takes and  $f=ma$  itself are themselves quite loose, having only a family resemblance to one another. As Buchdahl himself has rightly stressed, this makes for an extremely odd situation when these laws are put into relation with the Kantian categories. Newton's laws are presuppositional, and hence 'transcendental', in the first place because they provide the basic vocabulary and relational structures for all physical theory; they possess a constitutive intention similar to Kant's categories, and there is an equal difficulty with respect to them of correlating them with characteristics of empirical phenomena. Secondly, Newton's laws are 'transcendental' in being 'tightened' versions or more concrete specifications of the principles for the possibility of a nature in general, even if, as is in fact the case, numerous assumptions -- for example, for the First Law, that 'change of motion' is identical with 'change of velocity', and by velocity is meant 'uniform velocity' -- are required to get a metaphysical theorem ('All change of matter has an external cause') linking the Newtonian law to the Kantian category.<sup>5</sup> In short, because there was no physical model constraining Newtonian theory the whole movement from category to metaphysical theorem to law takes place in a conceptual realm, thereby blurring

the edges where transcendental philosophy ends and empirical theory begins. I shall return to this point in a moment.

Beginning now with Kant we can see the reason for the slippage between transcendental and empirical resides in Kant's attempt to ground all necessity in the understanding, making all necessity epistemic in nature.

A rational doctrine of nature, then, deserves the name of natural science only when the natural laws that underlie it are cognized a priori and are not mere laws of experience. Natural cognition of the first kind is called pure, but that of the second kind is called applied rational cognition. Since the word "nature" already carries with it the concept of laws and since this concept carries with it the concept of necessity of all the determinations of a thing which belong to its existence, it is easily seen why natural science must derive the legitimacy of its designation only from a pure part of natural science, namely, from that part which contains the a priori principles of all remaining natural explications, and why natural science is only by virtue of this pure part science proper. (MFNS, p. 468-9; emphasis mine)

This is our old problem again; we could not comprehend a 'law' of nature which did not hold with necessity, but only that which can be established a priori is capable of holding with strict universality and necessity. It is for this reason that "a rational doctrine of nature... deserves the name of natural science only when the natural laws that underlie it are cognized a priori and are not mere laws of experience." Kant's bizarre coupling of "natural laws" with what is "a priori" is unavoidable if we are to explain the necessitarian character of natural -- empirical -- laws. According to this theory all of the explanatory and necessitarian features of empirical laws are derived in some vague and unexplained way from their

a priori ground. Kant does think the pure laws of the understanding 'hand down' their powers, presumably by the following route: pure laws of the understanding are variable expressions, which are qua laws of understanding necessary; through metaphysical demonstration an empirical law of nature is shown to be a value of the variable function of the understanding. All this would appear to be a necessary result of Kant's strong anti-realist belief that representations "as mere appearances...are subject to no laws of connection save that which the connecting faculty prescribes (B 164)."

Before attempting to draw any conclusions from this line of argument, it is worth noticing that in a different context Schrader has come up with similar results.<sup>6</sup> In the course of explicating Kant's theory of concepts Schrader comes to the conclusion that the only difference between categories and empirical concepts is one of degree; the former being more universal than the latter. Both kinds of concepts, he argues, show the common characteristics of being rules for the combination of manifolds which originate in the understanding. Since both the form and generality of empirical concepts depend upon the spontaneity of the understanding, Schrader regards the view that empirical concepts are abstracted from empirical intuitions as a non-Critical doctrine. It can, I think, be demonstrated (following B 134, n.) that empirical concepts must refer to classes of representations, i.e., 'red' refers to the class of red color representations

in distinction from the classes of blue, yellow and green color presentations. The generality of empirical concepts is supplied by the imagination when it shows how 'this' concept can be applied to other possible representations besides 'this one'. Furthermore, we cannot separate empirical concepts from categories by claiming that only the latter are necessary; the categories are necessary only as conditions for the possibility of experience; but in this sense empirical concepts are also necessary: we could not synthesize 'this' representational manifold unless we employed just 'these' concepts. "Empirical rules stand under a priori rules, though both are functions of the understanding. Why then are they not a priori? If not derivable from experience by abstraction and if not intuited, what choice is there but to regard them as a priori?"<sup>7</sup> According to Schrader there is no choice, empirical concepts must be regarded as a priori. Of course, Schrader is overlooking the important point that for Kant we can verify the objective validity of categorial concepts a priori but we cannot verify the objective validity of empirical concepts a priori. Therefore Kant can distinguish empirical from categorial concepts by reference to the conditions under which their objective validity can be established. But this would still leave the situation very much as Schrader says it is, namely, there being a continuum between categorial and empirical concepts.

While there is nothing wrong in the idea of a continuum

of concepts of this sort, indeed I think it correct, it is unsatisfactory to make all concepts a priori in nature. If for no other reason this theory is unacceptable because it makes semantical relativity dependent on the accident that one community chooses one set of concepts out of the understanding's all but infinite repertoire while another community, it so happens, chooses another set. But this eliminates, in principle, the possibility of explaining semantical differences, and worse, the possibility of explaining the development of semantical systems.

Different types of problems arise in the scientific context. Concepts refer to features or classes of features of representations. By extension it follows empirical laws refer to quantitative relations between classes of features of representations. In general for Kant it would seem that laws are descriptive in a normative way, that is, laws constitute objects in a certain respect by prescribing how that aspect of them is to be described. And again there is precedent for this in Newtonian theory: we can interpret the inverse square law of gravitation, of which Kant was so fond, as describing how any given body moves at a specified distance from some other body. But this is an accidental feature of dynamical theories as opposed to any other; all dynamical theories can be interpreted either descriptively or explanatorily. On an explanatory interpretation of a dynamical theory we would take 'gravitational forces' and the like as capable of causal activities of some specified sort, that is, as efficient causes with which we could associate causal mechanisms described in a

physical model. On the descriptive reading of dynamical laws no physical models are associated with them and no causal mechanisms are postulated. Kant was encouraged to believe that his slippery continuum of concepts grounded in the a priori functions of the mind could provide a foundation for science because he had only to deal with a special class of scientific theory (dynamical laws), and with only one possible interpretation of them (descriptive). Because he did wish to read gravitational forces as having the force of efficient causes he had to shift the explanatory function of laws to the metaphysical level. In fact Kant's theory in its doctrinaire form cannot account for the explanatory function of scientific theories and shades over into a view of science barely distinguishable from that of empiricist philosophers.

A good example of how the explanatory function of theories can be suppressed in favor of their descriptive constitutive function in a Kantian framework is to be found in the neo-Kantianism of Cassirer. Once Kant's metaphysical level of analysis is dropped there remains nothing more to laws than their ability to organize more and more features of experience into relations of functional interdependence. Notice in the following passage how the ambiguous treatment of force leads to a dematerialization of the physical world, a replacement of physical relations by conceptual relations.

The magnitude and form of atoms have now disappeared; what differentiates them is merely the position, that they mutually determine for each other in the system of dynamic actions and reactions... All independent,

self-existent attributes are now completely effaced; what remains is merely the relation of a dynamic coexistence in the law of the reciprocal attraction and repulsion of the points of force. Boscovich urges energetically, and Fechner after him, that force itself, as it is here understood, resolves into the concept of law and that it is meant to be merely the expression of a functional dependence of magnitudes. The atom, which in its origin goes back to the pure concept of number, here reverts to its origin after manifold transformations; it signifies nothing but the member of a systematic manifold in general. All content, that can be ascribed to it, springs from the relations of which it is the intellectual center.<sup>8</sup> (emphasis mine)

Was not Kant's theory of force meant to avoid the reduction of matter to the "pure concept of number"? And what can be made of Cassirer's "intellectual center"? The metaphysical level of analysis represented in MFNS is meant as an attempt to avoid these conclusions. Kant says that force itself is incapable of construction, and therefore cannot be mathematically represented. For this reason he regards forces as fundamental; in Kant's theory what is 'fundamental' represents the limits of pure conceptual representation, the place where 'ontological' considerations appear. Substance, beside being composed of fundamental forces, is also the movable in space; motions can be expressed as velocities, and velocities can be made intelligible through spatial construction, that is geometrical constructions. Kant's ambivalence here resides in the fact that matter's potential for motion would be inexpressible if point centers of force were impenetrable atoms rather than forces with a degree of resistance. Kant blurs the distinction between intensive and extensive magnitudes in

MFNS by attributing intensive magnitudes to forces that serve as the ground for their representation as extensive magnitudes which can be captured and made intelligible through geometrical construction. His quick passage from intensive to extensive magnitudes reflects, I suggest, simply the difficulty of representing intensive magnitudes in a constructive fashion, and therefore represents a special case of his more general problems concerning the constructive character of any mathematics other than geometry. The equation, then, of 'intelligibility' with 'constructibility' is by no means harmless; if construction is equivalent to 'spatial' construction, and if the causal efficacy of things is grounded in powers which can only be represented by intensive magnitudes, then the variety of powers things possess are removed beyond the pale of intelligibility. Where Cassirer has "intellectual center" Kant has "fundamental force"; in both these expressions there lurks an equation of intelligibility with a priori intelligibility and thus a tacit commitment to the geometrization of experience.

4. While the Cassirer-Kant position is plainly false, what I hope to show below is that a stronger account of the material features of experience (intensive magnitudes) is required even for a coherent defense of the Analogies. My strategy will be to employ an embellished (un-Kantian) reading of the Anticipations as the background for my reading of the Analogies. And this is equivalent to dropping the form/matter distinction as Kant draws it. The initial plausibility of that theory

depends upon the content of judgments and so the features of material objects having no more than presentational status. Causal efficacy is attributed to representations, but this is so because, like causal necessity, we could not understand causal relations without this attribution. But no theoretical account is ever offered in the First Critique as to what about objects or the properties of objects allows for this attribution. When Kant does finally offer some reasons for this in the force theory of MFNS he is making his proposal at the 'metaphysical level' against the backdrop of Newtonian physics; which suggests that no material restrictions on the nature of properties is operative prior to this level of analysis. If atomism, for example, is incompatible with a causally structured universe, then strong enough anticipatory restrictions should be operative at the categorial level to disallow it. Otherwise we would not be able to criticize from the perspective of our blueprint the intelligibility of a given theory in the way, say, Einstein criticizes quantum mechanics for its commitment to action-at-a-distance.<sup>9</sup> And this implies that the difference between a blueprint and a completed theory is only one of degree in concreteness (detail), and therefore we cannot identify the categorial, formal features of experience with the most pervasive characteristics of pure spatiotemporal manifolds.

#### B. The Ontological Reduction: Forces

5. The twin topics of the Anticipations are sensation and the real. The real must not be confused with the

actual or with what exists. An object of experience is possible, actual or necessary. Epistemically, possibility delimits the range of empirical conceivability in accordance with the categories; actuality refers to what agrees with the conditions for judgment and is bound up with sensation; and necessity refers strictly to the universal conditions for the possibility of experience. These epistemic modalities have been supplied with a complementary set of ontic modalities, the most important of which is necessity: the complete system of physical laws and theories grounded on the theoretical description of the unconditioned. Now it follows from the coupling of these two modal systems that a causal event is contingent from the epistemic perspective but necessary when set against the background of a complete physical theory. For Leibniz also the difference between necessity and contingency is one of perspective: all the accidents of a substance adhere to it necessarily from the perspective of God; but men are incapable of carrying through the analysis of the subject to its completion and therefore all accidents to them appear as only contingently related to their subject. Kant only went half the way in overturning the onto-theological cosmology of rationalism; and thereby left open as a rationally conceivable possibility there being a monadological underworld beneath the world of phenomenal appearance. Properly this underworld should be hypothesized as being populated by cognizable, Lockean microtheoretical entities, thus completing the refutation of Leibniz. For the realist

God is replaced by man, analytic necessity by a schematized, ontic theory of necessity, and complete logical analysis by a complete science; scientific inquiry thus replacing infinite logical analysis.

According to Baumgarten what distinguishes the real (realitas) is determinateness, not however in respect to knowledge, but in respect to the essential nature of the thing. Determinations are what belong to the res, the body as such.<sup>10</sup> Without the real, regardless of what it turns out to be, we could decide nothing as to actuality or inactuality, for there is nothing as such to be actual. The opposite of the real, then, is negation or negativity -- privation. And Kant says all this quite clearly in the Schematism.

Reality, in the pure concept of understanding, is that which corresponds to a sensation in general; it is that, therefore, the concept of which in itself points to being (in time). Negation is that the concept of which represents not-being (in time). The opposition of these two thus rests upon the distinction of one and the same time as filled and as empty. (A 143 = B 182)

What corresponds to sensation in the world is being -- not existence. Being and not-being represent the difference between time filled and time empty; and an empty time represents not the not knowable but the where in which there is nothing to be known. Kant does wish to argue that whatever the real is, since it determines a thing in time and time is only a form of intuition, then "that in objects which corresponds to sensation is not the transcendental matter of all objects as things in

themselves (thinghood, reality) (ibid)." And accepting this would entail accepting that all existence is in inner sense (the soul), only appearing to hover outside it: a theory which Kant himself apparently refutes in the realism argument, and a theory which, if accepted, would undermine Kant's entire project. With the rejection of the inner sense theory the obvious conclusion to draw is that what corresponds to sensation is the transcendental matter, or ultimate substrate, of all objects, defining thus the thinghood of the thing: what the stuff of things in general is.

This recognition does not alter what Kant says, the meaning of the argument of the Anticipation, only the extension of that argument. The real which corresponds to sensation on any account would refer to the what of a thing, its quality or quale; only if the inner sense theory were accepted it would usurp the ontological centrality and implications of the real for Kant's theory, yielding a monadistic theory of consciousness rather than a force theory (for example) of things.

Before commencing, a short aside is in order. There is a sense in which a priori knowledge in its role of constituting the conditions which make knowledge possible serves as, or can be comprehended as, an 'anticipation' of empirical knowledge and hence of empirical phenomena. Now while it is true to say one mark of differentiation between the a priori and the empirical is sensation, Kant is confused when he says that because sensation is irredeemably a posteriori it might seem as if we could not

have a priori knowledge concerning its nature. The confusion in question belongs not to the problematic situation of sensation in our lives, but to Kant's own confusions relating to the difference between formal intuitions and knowledge about our forms of intuition, i.e. the principles of synthesis by which we order the spatiotemporal manifold. Transcendental knowledge cannot be comprised of formal intuitions, which are indeed separated from empirical intuitions by sensation, but of propositions which answer to the question: 'What are the conditions necessary for the possibility of (empirical) knowledge?' And this question can be broken down into two complementary parts: What are the conditions necessary for obtaining observations of things? and: What are the necessary conditions that allow us to obtain knowledge of things? Here our concern is primarily with the former question, which itself can be broken down into two constituent parts. Firstly, we can ask what must hold of any object that might present itself in perception; and secondly, what must hold of any object of perception if we are to be able to refer to it what is presented to us in perception. There is nothing odd, then, in supposing that we might be forced to place categorial structures on the nature of the ineliminably a posteriori element in knowledge and its objective correspondent -- sensation and the real. The sort of questions asked and the kind of answers supplied by the Anticipations do not differ in any essential way from any of Kant's other transcendental reflections, although, to be sure, in the context of the

theory of synthetic a priori judgments outlined earlier there would be no place for the Anticipations, for there Kant clearly did identify the having of a priori knowledge with cases of pure intuitions falling under pure concepts, that is, with formal intuitions.

6. Kant says no experience could inform us of the presence of empty space since no observation is possible which could verify a judgment to that effect (B 214).<sup>11</sup> This is not obviously true; there is no reason why we could not have a theory postulating that under certain conditions, when certain readings registered on our test apparatus, this would indicate that there was nothing at all in the test chamber. Perhaps if we could view inside the chamber it would appear as if a green, gaseous cloud were filling it. But this only goes to show the concept of a vacuum, of a completely empty space, to be a theoretical concept, evidence for the existence of which is indirect in the extreme. By 'extremely indirect' I intend that our evidence for a vacuum is not comparable to, for example, the theoretically mediated evidence we have for the existence of a certain sub-atomic particle when a colored streak of gas appears in a cloud chamber. Now this does go part of the way toward explicating what Kant is driving at when he says the real is being as such in time, the opposite of which is not-being. We could not directly detect the existence of a vacuum, for by hypothesis there is nothing which could (causally) affect our senses or theoretical apparatus. Our theory would state what conditions would have to be met for us

to be sure a given space had been emptied of all content, or why if there were any content in a given space it would be registered by our detection apparatus. Thus the conditions specifying the existence of a vacuum must relate to kinds of entities, that is, they must state that all known entities have been removed from a region of space or if present would be detected by our apparatus. The concept of a vacuum is the theoretical (empirical) equivalent of the negation of the theoretical specification of the categorial concept 'the real'. Kant's concern then is not with what is the opposite of a vacuum, but with what must characterize anything which we would have to remove if a vacuum were to be created.

Something must characterize what fills space and time. It cannot be identified with secondary qualities, for under specified conditions the judgment 'A green gas in the test chamber at t' implies nothing is in the test chamber. Moreover, it is usually accepted that secondary qualities can be reduced to primary qualities. But the real cannot be identified with primary qualities either: what is it that has shape, extension, figure and moves? Earlier (Chapter IV, C) a comparison was suggested between Kant's concept of the real in perception and Locke's concept of solidity; solidity for Locke being that property of bodies whereby they are conceived as capable of filling space. Solidity seems to differ from all other primary and secondary qualities in not obviously requiring a spatiotemporal spread for its existence. Primary and secondary qualities share the characteristic

of being extensive magnitudes; by elimination it was then hypothesized that the only quality which could uniquely characterize the real was being an intensive magnitude. While all secondary qualities possess some intensive magnitude, none can be completely accounted for in terms of intensive magnitudes: colors require some spatial spread for them to appear, and all smells are voluminous, etc. And all primary qualities are kinds of spreads along spatiotemporal matrices.

The contention that the real should be characterized as constituted by pure intensive magnitudes receives support from the well-known regulative principle of scientific explanation that no explanation should presuppose the very thing it is attempting to explain; one cannot explain why X is red by saying all red things are composed of red particles, and so on. Therefore one would expect all picturable properties of things to be eliminated in scientific advance. Since our forms of intuition are spatiotemporal, and since space and time are extensive magnitudes, it follows that the elimination of the picturable required by this principle entails the elimination of all primary and secondary qualities. Again, intensive magnitudes seem the only plausible candidates for the real.

Kant's way of putting the difference between the picturable and the real is interesting and of considerable theoretical importance. He says, "The quality of sensation, as for instance in colours, taste, etc., is always merely empirical, and cannot be represented a priori.

But the real which corresponds to sensations in general, as opposed to the negation = 0, represents only that something the very concept of which includes being (A 176)." Briefly, Kant is suggesting there is a difference between saying 'I am now being sensorily affected, and it looks, feels, tastes like this...' and 'I am now being affected and there is something affecting me'; furthermore, the second of these statements is not reducible to the first. Now if perceptual reports are not equivalent to statements to the effect that there is something in space and time, then the statement 'There is Being in place p at time t' cannot be an empirical statement. Thus, there must be something filling space and time, or nothing would exist; but since no perceptual report can capture the fact of there being anything whatsoever before us, Being (= the Real) is not an empirical concept -- it is a category. Again, because all secondary qualities should be eliminated on the basis of our stated regulative principle for explanation, and the observation of any of them is at any rate compatible with the claim that there is nothing at all present, and since all primary qualities are incapable of independent existence, it follows that the conceptual place filled by the real cannot be filled by any known observational predicate. Of course any number of non-observational (theoretical) predicates may function as values of being, but the difference between them and being, as between any category and its values, is that they are tied to one another and to observational predicates by laws; thus

whether one or another of them is present at a place and time makes an observable difference, and thus there is a difference between saying x or y is here, and there is something real here. On these grounds Kant was quite right to assert that the real is a category. And by elimination we have hypothesized that it can only be characterized as an intensive magnitude. Therefore, if anything exists which is a pure specification of the real it will be characterizable solely in terms of intensive magnitudes. Finally, since no primary or secondary qualities can be characterized purely in terms of intensive magnitudes, they cannot characterize body as such, they cannot be true determinations of body; and consequently there is not good reason for supposing them to be qualities (of body) at all.

Before going on to elaborate the reductionist implications of this line of thought, it will clarify matters somewhat to rebut a number of charges that have been brought against Kant's argument. For a case in point I have chosen the attack of Wolff in his well-known work, Kant's Theory of Mental Activity. I hasten to mention that some of Wolff's criticisms, since they depend upon results drawn from a criticism of Kant's theory of synthesis when subjectively interpreted, are to the point. But it is not at all clear that any of Kant's arguments for the categories when placed in the context of a subjectivist interpretation of synthesis will work, assuming, as I do, that such a theory of judgment is altogether false. As we shall see, Kant's difficulties

are in relating intensive magnitudes to judgments via sensations, not in his arguments for intensive magnitudes as such.

7. Wolff's argument turns upon his understanding of the Kantian notion of synthesis in connection with Kant's comment that we could "determine a priori, that is, can construct the degree of sensations of sunlight by combining 200,000 illuminations of the moon" (B 221). Wolff first mentions that this statement, even if true, would not suffice to harmonize the Anticipations with the general theory of synthesis, for Kant only states that such a synthesis is possible, not that it has or does generally take place. "If there has not been an instantaneous synthesis, bringing the intensity of a sensation up to its perceived level, then how can we know a priori that it would have a determinate degree -- knowledge on which can be based a theory of matter?"<sup>12</sup> Wolff also claims that since in the putting together of 200,000 moon-illuminations to form sunlight the representation of the moon-illuminations precedes and makes possible the representation of the sunlight, by Kant's own definition (B 203) sunlight would have extensive not intensive magnitude.

To begin with, Wolff's emphasized "would" indicates a confusion. We are saying that if objective knowledge concerning properties is to be possible then a thing must have a determinate degree, and a thing's degree of intensity must exist on a single scale for all the same sorts of qualities. Now this indicates an important

facet of Kant's position which is easy to overlook. He is not saying, either in the Anticipations or in the Axioms, that in fact in empirical judgments we do synthesize things according to intensive and extensive magnitudes -- we do not; mathematical synthesis is always explicit as compared to the often implicit (unconscious, habitual, etc.) synthesis of the manifold in judgment. If empirical judgments are to have complete objectivity then these types of mathematical notions must be applicable to things in the way specified; that is, we must be able to synthesize properties of things in this way.

We know that the intensive degree of a thing must be determinate if empirical knowledge is to be possible. If qualities did not have a determinate degree, then Kant is committed to saying that empirical knowledge would not be possible. Now it does appear more difficult to come up with an argument showing intensive degrees must be determinate than it is to show we need the general concept of an intensive magnitude to give a complete account of the physical world. But this is not so; saying intensive magnitudes are required is adequate to establish that they must have some determinate degree once it is shown they must be greater than zero, which is necessary for there to be anything at all, and less than infinity, which follows from the Kant-Boscovich argument against absolute impenetrability. Therefore, once we have established the categorial necessity of qualities possessing some intensive magnitude we are on safe ground in claiming their degree will in each case be determinate. To say that some quality

has a degree but no determinate degree is just as contradictory as saying a thing has some size but no particular size, exists at some time but not at any definite time, or is at some place but not any particular place with respect to other things. That Kant is thinking, more or less, along these lines seems plain from the passage where, after having given the example of the possibility of radiant heat filling all space in different degrees of intensity, he states:

I do not at all intend to assert that this is what actually occurs when material bodies differ in specific gravity, but only to establish from a principle of pure understanding that the nature of our perceptions allows of such a mode of explanation, that we are not justified in assuming the real in appearances to be uniform in degree, differing only in aggregation and extensive magnitude, and that we are especially in error when we claim that such interpretation can be based on an a priori principle of the understanding. (A 174-5 = B 216)

Wolff's second argument suggests that Kant's theory of intensive magnitudes is really a theory of extensive magnitudes. Here Wolff is confusing the generation of a scale with what and how that scale measures. Because things vary in intensity, at a moment, we can generate scales upon which they are measureable. While the scale itself is only constructible through continuous synthesis -- how otherwise given our concept of number? -- what the scale measures is given at a moment. This can be understood if we compare weighing something with measuring (the length of) something. Using any scale whatsoever we always get the weight of something 'at a moment', the balance balances and that is the weight of the thing. The

weight exerted is instantaneous at a place and at a time. Moreover, we cannot weigh half a thing without artificiality, although we can discover what half its weight would be. Intensive magnitudes, in Kant's view, do not 'take' time or (per se) fill space. On the other hand, using any length as a unit, we measure a thing by continuously applying our unit-measure to it. Extensive magnitudes, which refer to the extent of a thing, do fill space and take time (extensive magnitudes measure how long a thing lasts, etc.). In contemporary philosophy of science the distinction Kant is drawing between intensive and extensive magnitudes is made through the distinction between dimensional and no-dimensional magnitudes.<sup>13</sup>

Wolff's last argument is more subtle, and strictly internal to Kant's theory of mental activity. First Wolff rightly points out that Kant tends to confuse an a priori synthesis (necessarily of a pure spatiotemporal manifold) with the synthesis of an empirical manifold according to a priori principles. And this confusion itself tends to get immersed in Kant's vacillation between what Wolff calls subjectivism and the theory of double affection. Subjectivism makes empirical objects simply representations in the mind resulting from a synthesis of the manifold. The theory of double affection "distinguishes between perceptions and phenomena within the world of appearance. Perceptions are the (empirical) effects of an interaction between phenomena and sense-organs. As such, they are representations of the phenomena, which in turn are appearances of the unknowable

realm of independent reality."<sup>14</sup> In the Axioms it does not matter whether we take appearances as interpretations of an empirical manifold or as constructed from a pure manifold, in both cases space is a pure as well as an empirical manifold. In the Anticipations, however, if we abstract from the quality of a sensation we perceive must abstract as well from its degree of intensity. Consequently, Kant must take matter as something independent of our sensations; the degree of sensation corresponding to the degree of an intensive magnitude. This commits Kant to the double-affection theory in the Anticipations. But how, Wolff complains, can Kant prove that both sensation and the real which corresponds to it are intensive magnitudes? "Even if he can demonstrate as an a priori principle that all sensation has an intensive magnitude, how will he make the transition to the principle that matter or substance also has intensive magnitude?"<sup>15</sup>

The subjectivist interpretation of the Anticipations must be wrong; how could we construct the intensities of sensations in the synthesizing process by which we make judgments? It is not some occult felt intensity gathered together in synthesis that corresponds to a measure of intensive degree in the object, but a scale against which we measure the intensity of the pressure of the properties of the object in certain terms, e.g., brightness, weight, density, and so on. In this way with the use of instruments and measures, we can move from sensational intensities to the real in the same way in which we move from subjective to objective time series through judgment.

Wolff has to my mind missed the point of what Kant was, however vainly, trying to say. As Heidegger has rightly pointed out, what the Principle is trying to say is that the real has first a quantity of degree and that is why sensation does also. Sensations can thus differ in degree and that corresponds to something existing in the object, i.e., differences of intensity need not be accounted for in terms of how full or empty any particular region of space is. With this in mind, Heidegger has suggested the following reformulation of the A Principle: "In all appearances sensation, and that means first the real, which lets sensation show itself as an objectivity, has an intensive magnitude."<sup>16</sup> And this clearly looks like a transcendental reinterpretation of sensation, that is, it shows us how to move from a subjective state of affairs to an objective state of affairs such that the subjective becomes not a limit to our knowledge, but the very possibility of a basis for objective knowledge.

Now there is an obvious sense in which Wolff's criticism here is correct; the real as a category, unlike any of the other categories, does not correspond to any pure a priori intuitions, and nothing of the real can be learned from an a priori synthesis of the imagination. But knowledge about any of the other categories cannot be garnered by such a priori means either. That sensations differ in degree is, if anything, an empirical fact; and the link between differences in the intensity of sensation and difference in the degree of the real is tenuous, although no more tenuous than Kant's securing of the

geometrical structure of space by grounding it in the structure of our sensory apparatus. Nonetheless, there remains a problem of explaining what conceivably could fill space and time, and therefore how whatever it is filling space and time could affect us in order that, in the appropriate circumstances, we might perceive the appearances we usually do. Kant's point comes down to the simple comment that neither primary nor secondary qualities can explain these phenomena; we require more versatile concepts like force or power which can be characterized as being intensive magnitudes. The real/unreal distinction comes to replace the primary/secondary quality distinction once we discover primary qualities are unable of existing on their own.

8. Now granting the concept of intensive magnitudes in the context of the real/unreal distinction replaces the primary/secondary quality distinction thereby providing categorial precedent if not categorial grounds for the reduction of matter to force in the Metaphysical Foundations of Dynamics chapter of MFNS, why is it the Anticipations, at first glance, seem so insubstantial? Why is it that Kant's theory of intensive magnitudes seem to legitimize nothing more than, say, the possibility of distinguishing a region's size from the degree of impenetrability which fills it, and thus of denying the existence of empty space from the fact there are differences in mass and impenetrability in some given region of space? Establishing these possibilities, as well as denying the existence of empty space follows from the fact of motion,

are not at all minor; yet they seem to arise in a philosophical vacuum, standing well apart from the rest of Kant's argument in the *Analytic*. Since the transeunt force theory is important to the refutation of Leibniz, then part of the problem with the *Anticipations* is their independence from the discussion of causality. A fault to be remedied shortly. Of equal importance is the fact that the reductionist implications of the *Anticipations* are never connected with an analysis of the material (sensory) properties of bodies, and therefore the reader is left with no direct way of grasping how the theory of intensive magnitudes connects with the discussions of primary and secondary qualities by other philosophers. It is to this lacuna I wish to address myself.

There can be little doubt that Kant was never quite sure of how he ought to deal with secondary properties. Colors, he says, are not properties of objects to the intuition of which they are attached, but only modifications of our sense of sight (A 28). From this it follows that to see a color we must be affected by an object outside us, but the color we perceive, unlike the object, is subjective. And this coincides with Kant's usual view that sensation "relates itself solely to the subject as a modification of its state" (A 320 = B 376). Unless Kant is willing to accept the theory of double affection, this theory will force on him the so-called "mixed view" which has sometimes (wrongly) been attributed to Locke: we do perceive things in space, but only the spatial and temporal properties of things so perceived belong to them as they

are (empirically) in themselves; other properties should be regarded as only "changes in the subject, changes which may, indeed, be different for different men" (B 45).

Regardless of how we relate them to one another, Kant's theory implies a threefold distinction between subjective sensations, empirical objects in space, and the thing in itself which serves as the 'causal' ground of the empirical object.<sup>17</sup> Neither the double affection theory nor the mixed view is very satisfactory; so at B 70 Kant withdraws from this threefold distinction and states *qua* appearances roses are red and scented and in space; but none of these properties should be attributed to roses as things in themselves. As far as I am aware, Kant says nothing more on the question than what is stated in these two possibilities.

Colors, sizes and shapes should all be treated in more or less the same fashion. Square towers look round from a distance; stars many times larger than the earth look like specks in the sky when seen from millions of miles away; under yellow light red objects look orange. Each of these comparisons between the way an object appears and the way things really are with that object depends on the specification of ordinary (normal-normative) perceptual conditions. The presupposition behind the 'appears' ('looks') versus 'is' comparison is this: the concept of 'looking red' presupposes the concept of 'being red', and 'being red' involves the ability on the part of percipients to know what colors objects are by looking at them, and therefore of knowing what circumstances to place an object

in if one desires to ascertain the color of that object; and similarly for shapes, sizes, smells, etc. While it would be inappropriate to here attempt a refutation of phenomenalism a general objection to it should be mentioned.<sup>18</sup>

'Looking' red or round cannot be the basis on which we learn to use the concepts red and round because red and round cannot be taken as naming color or shape presentations. Color concepts designate classes of color presentations, and classes of color presentations can be conceptually sorted only by having rules limiting the extension of particular color terms. Rules expressing the limits of the extension of a term cannot be generated on the basis of the resemblance between different color presentations of the same color, but require as well rules for distinguishing between one class of color presentations and other classes of color presentations. Possessing a color concept is equivalent to having rules, then, for the identification of colors in opposition to one another in different circumstances; which is to say, 'colors' are what are picked out and discriminated by rules for the use of color terms and not whatever 'color' we happen to experience when affected by some object. This puts colors on the same footing as kinds of substances: in order to comprehend an expression as standing for an object we must be able to recognize that object 'as the same again', that is, we must know under what conditions that term will stand for the same object. And while the principles of individuation for objects are only ideally coextensive with the conditions for their existence, the line we are drawing here between

ideal and real cuts between scientifically grounded rules for the application of terms (limiting the extension of terms), and rules grounded on communally ascertained regularities of an observational sort, not between subjective recognitional capacities and objective states of affairs. Recognition and identification depend on causal regularities, the specification of standard conditions and the types of variation which can be expected under varying (abnormal) conditions. This strongly hints at the idea that the having of standard conditions for the perception of sensory qualities presupposes something about causal regularities and the causal background of perceptual consciousness.

In fact these causal regularities make themselves manifest once the concept of 'standard conditions' and 'varying conditions' are stated in more specific terms. An object is red only if it looks red to ordinarily equipped observers under standard conditions; red objects look orange to ordinarily equipped observers when seen in a yellow light, i.e., when a yellow light is reflected off of the surface of a red object that object looks the way an orange object looks under standard perceptual conditions. Now our "i.e." clause here must, I think, be interpreted as the proper expansion of the clause preceding it and not as a fanciful interpretation. To see this consider how abnormal conditions can be varied: we can alter the light the object is seen in, or the physiological condition of the observer, or we can place colored glasses on the observer; but is it proper to say a red

object looks orange to standard observers after it has been painted orange? Obviously not; the physical structure of the object has been altered through the painting of it, and it is therefore no longer a red object. Hence part of what is involved in 'standard conditions' is the separation of what counts as altering perceptual conditions and what counts as altering the object. The notion of altering an object, however, would not possess any significance unless we could specify what properties belonged to an object as such, that<sup>is</sup>, what is involved in an object's 'being' red, tart, smooth, and so on. When a rose loses its sweet odor we say it is decaying, its internal physical nature or structure is changing; if the dynamite will not explode, then we hypothesize that an alteration has occurred in its make up. The properties of objects are powers they possess in virtue of their internal structures such that in standard conditions normal observers will (would) be affected in such-and-such ways.

Recently it has been persuasively argued that unless we understood objects as the loci of causal powers we could not understand their ability to straddle different sensory modes.<sup>19</sup> When a property is attributed to an object we generally see that feature of the object as at least partially grounded in a causal background along with other properties of the object. This is testified to by the fact of our realization that to alter the property of an object we must somehow alter the causal background from which it springs. Causal backgrounds can be altered only through causal means; changing the angle of our vision or

the times of observation do not count as alterations of the object. Moreover, as has already been argued, objects must be partially identified with their causal properties in the sense of their typical modes of interaction and alteration with and with respect to other objects. But these blandly causal properties of an object would be but more 'simple' (recognitional) properties unless we saw them as rooted in the powers of the inner structure of the object; and this we saw is necessary in order to account for the typical modes of variation which almost all objects suffer. Reflecting lightwaves off its surface is a causal power of an object just as much as its 'ability' to produce odors and tastes in the appropriate circumstances; it is the same object which is red, tastes slightly acidic, and has a pungent odor. When the color of that object changes, for example, a tomato, so does its taste and odor. To account for this things must be regarded as the loci of causal powers, even if at any given time the totality of the powers of a thing or the inner structure accounting for those powers remains unknown or unexplicated. The concept of 'power' provides for the possibility of different properties having a common physical root or denominator, of what makes them all 'properties' of an object as opposed to the associated conditions under which that object can be best observed, and furthermore of how those different properties which all belong to the same object can interact with one another, i.e., why changing one of them can bring about a change in a different one.

9. Once ordinary properties of objects are identified

with the dispositional, causal powers of the object to which they belong, the route connecting properties, the real/unreal distinction as a version of the reduction of secondary properties to primary properties, and the valuation of fundamental forces as filling the variable specification of intensive magnitudes can be completed.

Ordinary property concepts, like the stereotypical constitution of natural kind terms for recognitional purposes, function in a promissory notish way against the time when physical theory will be able to fill in their causal background. We may employ two general principles for property individuation in order to give our account of properties even greater equality with our account of natural kinds.<sup>20</sup> Firstly, a real property must display itself in more than one way, that is, we must have some ways other than those employed to define a property by which we can identify it. Secondly, giving point to the notion of a thing as a locus of causal powers, there is the "principle of connectivity", which states that two things cannot differ in just one property, for if they did then, by hypothesis, that difference would be inexplicable. This second principle is, of course, nearly the same as Kant's injunction against *infima species*, and his requirement of spatial location for complete object individuation. Both principles of individuation are equally principles of explanation: "A property must have independent displays if it is to explain them; it must be connected to other properties if differences in it are to be explained. The identity of a property is shown by its role in explan-

ation."<sup>21</sup>

Things can lose their powers, and ordinary macroscopic objects are themselves only relatively long-lasting. These, then, cannot be the ultimate constituents of the universe, for their changes and disappearance must themselves be explainable. To ground the causal powers of things generally and explain the existence of general laws which hold for all things an explanatory regress to fundamental powers is required, for they alone can close the regress of explanation. A fundamental entity is characterized solely by what it is able to do, and so solely by its powers. If it had any nature or properties other than those directly attributable to its powers it would not be fundamental: those non-pure power properties would require explanation since they are just what make any entity subject to change. Thus according to Harré, "fundamental entities of the world will be those which, having no nominal essence of manifested qualities of any kind, cannot be altered, and being the bearers of numerical identity cannot be transformed: that is whose real essences are permanent."<sup>22</sup>

If our earlier account was correct, then there seems no reason not to identify pure forces or powers as ultimates: they are intensive magnitudes capable of existing for a point-instant; being neither primary nor secondary qualities they are not susceptible to change. As spatially distributed potentials powers are plainly intensive magnitudes since they are attributed to points in space. Further, Kant's dictum that fundamental forces, their

structural relations to one another, cannot be made intelligible through construction or, as we would prefer to say, cannot be explained, goes through, making perfect sense for an entity whose properties are its powers. Thus powers of a field are the only pure intensive magnitudes; therefore they are the only wholly independently and unconditionally real entities in the universe. This gives at least some plausibility to Kant's contention that intensive magnitudes are the real in perception. Moreover, some of the matters we have touched on here are directly relevant to Kant's discussion of substance and causality.

### C. The Ontology of Causality

10. The causal analogy says, if something happens then something else must have brought it about; that state  $y$  comes to be presupposes that some state  $x$  preceded it, and state  $x$  was caused to become state  $y$ . Now we can know that something is without knowing what it is. If we know what something is we are presupposing we know that it is. That something is the case, however, cannot be indifferent to what is the case. The what of things is constitutive of them as such; therefore the whatness of a thing must be shown to be determinative of existence. Roughly, the whatness of things provides the ground for judgments of existence. Kant will accomplish this move by identifying substance (= the real in its various manifestations) as that which determines appearances in their existence. The argument has two steps, corresponding to the first and second analogies respectively. The first step argues for the necessity of a permanent, and identifies substance as

that which is permanent, what remains the same through all change. The second step says that not only does substance remain the same through all changes, but moreover substance is the structure according to which all changes in the world occur, which in turn determines the objectivity of succession in time. Substance determines becoming; permanence determines change.

The principle of the permanence of substance reads: "All appearances contain the permanent (substance) as the object itself, and the transitory as its mere determination, that is, as the way in which objects exist (A 182)." To the concepts already under investigation two new ones are being added, namely, permanence and change. As is the case with the Second Analogy, Kant will here give us two readings of his principle; and this could have been expected, for we have already seen how Kant (unconsciously) tells two stories about knowledge, the first relating to empirical judgments, the second to science. Half the time what Kant appears to be discussing is objects solely in respect to the ways in which existence judgments become possible. The 'what' of the object, to which the Axioms and Anticipations apply, is indeterminate and must wait upon the Analogies in order for the appropriate form of the object to be specified; a specification which must be capable of relating existence to essence. Granting this twofold problem exists, allowing the plausibility of similar and overlapping accounts, still Kant is not always convincing about whether he has accurately identified either of these problems. Wolff has claimed that Kant

has tried to maintain a more traditional conceptualization of substance and attribute than is reasonable given his allegiance to the dynamical theory of matter. The Second Analogy suggests that, "an object is to be identified with its states, so that the distinction between unchanging substratum and successive attributes breaks down."<sup>23</sup> But this, as we shall see, is only a half-truth. In the realism argument, Kant suggests that the need for finding a permanent background against which the ordinary changes of medium sized objects can be perceived is satisfied by the relatively stable spatial order of things in outer sense. Because the phenomenal world is not, in regard to our perception of it, Heraclitean, locations in space are capable of being employed as true predicates of an object so that the individuation of one object from another can be successfully accomplished. And this notion of substance and individuation is doubtless one often used in the normal course of things; e.g., when identification of a thing by way of its physical properties fails, one attempts to trace the 'history' of the thing through space in order to judge whether what was there-and-then is the same thing that is here-and-now. This cannot be the full story concerning substance since the order of things in space is only relatively permanent; things, under the sort of substantial (generic) description applicable here do go clean out of existence, while the 'stuff' from which they are made continues to be. Kant's demand is that whatever is substance must be "something abiding and permanent, of which all change and coexistence are only so many ways

(modes of time) in which the permanent exists" (B 226).

Is there an argument in the First Analogy which meets this requirement?

From the Aesthetic we know all appearances must appear, or can only appear in time; from the general principle which governs the Analogies we know further that "all appearances are, as regards their existence, subject a priori to rules determining their relation to one another in one time" (A 176-7). The Analogies as a whole will establish this unitary conception of time.<sup>24</sup> Kant elucidates his problematic in the following way.

Thus the time in which all change of appearances has to be thought, remains and does not change. For it is that in which, and as determinations of which, succession and coexistence can alone be represented. Now time cannot itself be perceived. Consequently there must be found in the objects of perception, that is, in the appearances, the substratum which represents time in general; and all change or coexistence must, in being apprehended, be perceived in this substratum, and through relation of the appearances to it. (B 225)

At first glance our problem appears to be the same as the one considered above: to find a stable background against which the flux of change can be comprehended. It is tempting to stop here and argue that the spatial order of things is such an adequate backdrop and no other notion of substance need be sought after. This alone will not do, for it mis-reads the demands of the problem Kant is setting forth. Space as 'substance' -- as a system of ideal spatial relations in accordance with which object individuation is possible -- does allow us to know things in the course of their changes, but if all things are in time then we must be able to determine the temporal order of things

temporally as grounded in temporal relations. If all things are in time then there must be true temporal relations between things. The spatialization of time is a way of epistemically grasping change, not of grounding temporal relations per se. Time itself cannot be perceived, but time must nonetheless be able to manifest itself in 'temporal' ways, and a true ground for objective temporal relations must be found. Kant suggests that if things are known in change, which corresponds to temporal succession, then the ground for change must be sought in the permanent order by which changes occur. Phenomenally, that is, in relation to objects, the coordinate principles of permanence and change serve as the essential attributes of time, as opposed to, for example, 'now', 'before' and 'after'. Time itself, again, cannot be perceived; what we perceive is things and their states. Therefore in perceiving things and their states we must likewise be able to 'perceive' permanence and change. Things, though, are not permanent; yet the permanent must be nonetheless discoverable 'in' things. "In other words, the permanent is the substratum of the empirical representation of time itself; in it alone is any determination of time possible (A 183)."

In the Analogies Kant is feeling his way towards an alternative ontology to that of the empiricists. For the empiricist the ultimate entities of the world are events -- whether we take these as internal sense happenings or things in the world being irrelevant here since the notion that things are logical constructions out of

sensory data overlaps these two realms. Events exist at a moment, in a particular time-slice, and also in a spatial order relative to one another (above, below, to the right of, etc.). From these minimal elements the empiricist builds up his concepts of an object, including permanence and change. For example:

A homogeneous spatio-temporal array of point-events can be termed an 'object': objects are thus four dimensional entities. If the object has a temporal length of  $t$  units, then the object 'persists' for those  $t$  units. If the point-events at one 'temporal end' of the object differ in a systematic way from the point-events at the other 'temporal end', then the object 'changes' in the interval  $t$ . At different moments or instants throughout  $t$ , there exist different temporal parts of the object just as different spatial parts exist at different places.<sup>25</sup>

For Kant the concepts of a thing and its states, of permanence and change are all non-derivable, as opposed to the empiricist's account of things; 'event', however, as we shall see, is derivable. Permanence and change are of the essence of time; if there was no permanence time would be pure flux and pure randomness, unknowable; if there was no change nothing whatsoever would happen, the phenomenal correlate of which is that we cannot perceive an 'empty time'.

At the end of the First Analogy Kant offers a clue as to how we might bring about this new conceptual order of things. He says there: "Substances in the (field of) appearance, are the substrata of all determinations of time (A 188 = B 231)." The true substances of the world can only be intensive magnitudes, the real in perception. This goes well with Kant's claim that what we perceive

is the substratum which represents time in general (B 225). This is incomplete but it is a hint in the right direction. We must work with what amounts to a causal theory of time; that is, a theory of time where knowledge of time per se and temporal relations in general is derivable from knowledge of the causal nexus. Of course, Kantian time is not reducible to the causal nexus, just as Kantian space is not reducible to spatial relations between objects. Time, however, is only knowable by or through a determination of the causal nexus. Given Kant's ontology how can we make this work?

From our discussion of the Postulates and Anticipations it is fair to hazard that we can be said to be perceiving (judging) things in terms of their substratum when: a) we perceive them in terms of their ultimate constituents, the real; and b) we comprehend these ultimate constituents in terms of the laws that describe their interactions. Something like this seems to be lying behind Wolff's assertion that substance should be identified with the system of laws that bind the universe into a whole. Laws as such are of course permanent; and we could not conceive of them changing since the patterns of change they dictate are the background against which change itself first becomes intelligible.<sup>26</sup> What is wrong with this conception is that in conceiving of laws as the permanent form of change we again dirempt them from their material substratum; in other words, we have no understanding, except an impositional one, of where these laws comes from, and thereby how it is they can unify the

world. If these problems are not solved, then we have again failed to understand our understanding of nature. We know that laws cannot be descriptive of point centers alone, for Kant's ontology is, partially at least, one of things and their states. Thus arises the question of how the real relates to the perceptually manifest qualities of things in their lawlike relations to one another. And this raises a further problem of how causal laws could indicate the interdependence of permanence and change. In order to see how Kant tends to deal with these problems we must move from his discussion of permanence to his discussion of change, of causality, completing our discussion of substance in sequel.

11. No attempt will be made here to provide a full defense of Kant's thesis that every event has a cause. What I hope to show is that given Kant's argument a certain model or interpretation of physical alteration is suggested wherein this must be the case. Further, with the aid of a line of argument from Maxwell<sup>27</sup> we shall suggest that given this model of experience the relation between successive events can be construed as necessary.

On at least one of Kant's defenses of his position no particular interpretation of the nature of the objects of causal judgments seems to be suggested, and the arguments tend to sound phenomenalistic. This line of argument shall be taken (non-phenomenalistically) as discussing ordinary judgments of objective events, and will be shown to be incomplete. It is this line of argument many think to be Kant's position on the matter.

The argument in question is quite familiar, and for simplicity can be referred to as the ordering argument. Because there is a bifurcation between epistemic and non-epistemic perception representations necessarily play a double role in experience. Non-epistemically representations follow upon one another successively without having any intentional content; in order for an intentional content to arise these successive representations must be related to an object, by virtue of which objective validity can be conferred upon them. Part of what this involves is adjudicating as to whether the non-epistemic flow of representations relates or not to a 'flow' of somethings in the world, that is, by distinguishing the subjective time order of things from the objective time order. That such a distinction exists and should be made can be seen from Kant's example of perceiving a house (A 191 = B 236). One views a house portion by portion, taking in each perception successively upon the one preceding; the actual relation between, say, the roof and the basement, is not however one whereby the basement 'follows upon' the roof as a succeeding event in the history of the house. While there is a perceptual event of seeing first the roof and then the following moment the basement, no such non-perceptual 'event' takes place in respect to the house itself. In more radical cases the question is not whether there was an event in the world or not, but of two events in the world (thunder and lightning), which, if either, was temporally prior. This, Kant says, is a question not of

perception but for the understanding (B 233-4).

Now from this it is fair to deduce that there exists at least a conceptual necessity for separating subjective and objective time orders, and the obvious way of doing so is to ask what generates, makes possible and in general gives evidence for the existence of an objective time order. Kant answers that the concepts which determine as necessary that one state of affairs be as before and the other as after in respect to one another are those of cause and effect (B 234). A state can only receive a determinate position in the objective time order if it can be seen to follow upon the preceding state according to a (causal) rule.

The situation, then, is this: there is an order in our representations in which the present, so far as it has come to be, refers us to some preceding state as a correlate of the event which is given; and though this correlate is, indeed, indeterminate, it nonetheless stands in a determining relation to the event as its consequence, connecting the event in necessary relation with itself in the time series. (A 198-9 = B 244)

Even, then, if we do not have a causal law that will take us from A to B, if we perceive B then necessarily we suppose there was a state A upon which B would necessarily follow, that is which determines B in respect to the objective time order.

To be sure, this presentation of Kant's argument is far cruder than it need have been; nonetheless it seems to roughly conform to what is often supposed to be what Kant actually said. In order to know whether our perception of an event is objective we must distinguish the objective from the subjective temporal streams; the objective tem-

poral stream is determined by the relation of cause and effect. In order to conceive of the objective temporal stream as being determined with necessity the causal relation between an event A and event B must be (physically?) necessary. Ignoring for the moment the confusions surrounding Kant's modal vocabulary, the argument carries a moderate amount of conviction; only moderate because the argument as presented does not seem able to be put in the form of a more powerful reductio ad absurdum argument; or, in Kant's terms, it is not clear that experience would be impossible unless every event had a cause. Assume the opposite: every event does not have a cause. Now if the vast majority of events had a cause then though there might be some wild events wandering about, about which one might not know whether or not (for sure?) they had taken place, whether they were real or imagined, still the remaining events would be taken care of and reality in general be knowable. Moreover, if in respect to our wild events, if enough reliable observers saw them in standard laboratory conditions, for example, then it would seem reasonable to say that there really had occurred uncaused events. At any rate, there seems no good reason at this point why one could not make such a claim; what the incoherence of such a claim or judgment might involve. One could still in such conditions separate objective from subjective time orders -- at least if there continued to be enough caused events, however many that may be. Even here, we might wish to continue to say that the objective time series was

established through the relation of cause and effect, and that this relation was one of natural necessity. If this wooliness is unsatisfactory, it derives from too much being made to turn on the differentiating of the subjective from the objective time series, that is, on the need for establishing an objective order. As has been previously noted, this could simply lead us back to the spatial order of relatively long-lasting individuals; this being just the route which Strawson adopts at this juncture.<sup>28</sup>

The incompleteness of this version of Kant's argument stems from using the concept of 'event' too loosely; mostly, however, in a way conformable with empiricist ontologies where events are themselves the basic building blocks of experience. What is needed is to link the concepts of 'event', 'change', and 'state' (of a thing) more closely together, to make the relations between these concepts analytical.

12. Bird has suggested an argument to the effect that what Kant wanted to say was that the discrimination of events from non-events depends upon the former belonging to an objective time order because an event is a change in the state of an object (thing), which is to say, an event is just the effect (state-change) of a cause.<sup>29</sup> To put this in terms of what was said above: the successive flow of non-epistemic representations constitute a series of events in the life of the subject (a change of mental states caused by external impressions upon the senses), but not every event in the life of the subject

is representative of an event in the world. Some events in the history of the subject represent only aspects of one unchanging object, the house, for example. To perceive an event is to perceive a change in the state of the object; and the order of this event (a change from one state to another state of an object equalling one event in the world, one event in the history of the mental life of the perceiving subject), as Bird points out, is necessary because, amongst other reasons, a change in the order of the happening would entail that it was another (different) event that had taken place. In other words, the inference from 'The event A-B appeared to take place' to 'The event A-B really took place' does not really presuppose the use of the causal category, but its premise presupposes the semantical validity of an 'event' vocabulary. On the other hand, the inference from 'I perceived A and then perceived B' to 'I perceived the event A-B' does require the use of the causal category but its premise does not presuppose the vocabulary of events. The argumentative priority of the second inference follows from its theoretical neutrality concerning the event vocabulary in its premise; because not all descriptions of perceived states in the same object yield event descriptions, the latter inference is not valid without further conditions being specified; namely those laid down by the causal category. The change from the argument originally offered is that we are not here trying to discriminate the objective from the subjective time order, but event-descriptions from

non-event-descriptions, and this is necessary because from the ontological perspective of 'things' and their 'states' not every perceptual experience corresponds with some event in the world. Significantly, the objective/subjective time order distinction argument is indifferent to the ontology of the objective world (in some respects), and therefore is compatible with an event ontology.

Kant is not always clear about what ontology he is employing, and there is not enough textual evidence to support the thesis that he was explicitly aware of this distinction between event ontologies and object ontologies at all. Indeed, it often appears as if the realistic turns of argument are accidental to his presentation, although the non-realistic presentation does not seem capable of supporting the position Kant wishes to hold. Two nearly continuous passages point up the differences between the forms of argument. The first passage reads: "The objective succession will therefore consist in that order of the manifold of appearance according to which, in conformity with a rule, the apprehension of that which happens follows upon the apprehension of that which precedes (A 193 = B 238)." Almost immediately afterwards we find, "In conformity with such a rule there must lie in that which precedes an event the condition of a rule according to which this event invariably follows (B 239)." The first passage amounts to no more than a transcendental reformulation of the inductive rule, with the inductive circle lying quietly in waiting behind it. To secure the objectivity of succession we must be able to produce a rule

to the effect that A-like events are always followed by B-like events, of which (e.g.) this A and this B are an instance. To complete the circle we need only add that the evidence for such a rule is just that A-like events are always (have always been) followed by B-like events. This first passage is in a passage, we might add, where Kant is discussing how we can differentiate the apprehension of subjective successions from objective successions.

The second passage also employs the vocabulary of events, but its argument is not compatible with an event ontology. It says that for a rule of advance from A to B there must lie in A a condition which is the ground of a rule according to which B necessarily follows. To put it otherwise: from a complete state description of A, B is necessarily entailed. In accordance with this line of thought the weight of argument must be put upon the nature of the object, such that a description of it will provide a rule, and so also provide for the ground of the modal tie. It is in the nature of the object we must seek for the ground of the causal relationship and for the necessity of that relationship. Since I know of no argument to the contrary, I assume that an event or point event is in no way capable of providing such a ground.

Events relate to the state-changes of familiar molar objects. In order to be able to claim that an event has taken place it must be possible to point to a state of an object which is different from the state of that same object at the previous moment. If this cannot be done

then no event has taken place; if it could never be done then we should have nothing but "a play of representations, relating to no object" (B 239). Judgment differs from pure, non-epistemic perception in relating representations to an object; "the object is that in appearance which contains the condition of this necessary rule of apprehension (A 191 = B 236; emphasis mine)." Kant is not saying, then, that objective succession is that which occurs in accordance with an inductive rule, and the having of such a rule is what allows one to separate objective from subjective successions. Rather, objects are such that we can discover in them a rule that takes us from a prior to a succeeding moment; or, in the case of inductive, experimental laws, if those laws are true then there must be in the object the ground for them: theories explain why observational regularities work as they do. And the advance, Kant asserts, from A to B is a necessary one: "this determinate event follows inevitably and necessarily (B 244; see A 194 = B 239)." It is the "relation to an object" that confers necessity upon our representations, and it is the object which provides for the rule of advance from one moment to the next (A 197-8 = B 242-3). An event is just the sort of thing which is caused, and the causal determination of a thing is necessary.

13. At the end of the Second Analogy, in a heuristic rather than argumentative vein, Kant makes the following comment: "Causality leads to the concept of action, this in turn to the concept of force, and thereby to the

concept of substance... Wherever there is action -- and therefore activity and force -- there is also substance, and it is in substance alone that the seat of this fruitful source of appearance must be sought (B 250)." And when Kant goes on to question how we are to conclude from action to the permanence of that which acts, one should recall an earlier passage (B 213) where Kant tells us that the cause of determinations of appearances is to be found only in the unalterable. Kant seems, then, to have something like the following scheme in mind. All bodies are in thoroughgoing interaction at a moment; the world is made up of bodies and their states, all changes being in the state of a body from one moment to the next; and since bodies are only singularizations of the field, all changes are ultimately only state-changes in the universal field as a whole. Since all succession is only change, then all change can only become comprehensible against a background of the unchanging. What does not change is the real in respect to the laws appropriate to it; since the real (forces) does change in 'degree' of intensity, that is, manifests itself in situation-relative ways, the permanent laws applicable to the real will be laws of change, conditions of some sort. This is the picture which needs filling in.

As anticipated in the Anticipations we are going to move from a world where things are congeries of properties or point-events to one where things are nexuses of causal powers, where properties are all by nature dispositional. In what follows we shall mix transcendental and 'metaphysi-

cal' levels by speaking of forces and powers instead of intensive magnitudes. It is assumed that anything that can be said in a very general way to be true of forces can likewise be said to hold of intensive magnitudes, since, as argued, intensive magnitudes belong to the real as such.

All so-called secondary properties, that is all properties of things not governed by the Axioms of Intuition, are dispositional. This fact about the nature of things is deeply embedded in ordinary language -- a hint as to the plausibility of this thesis, not a gauge of its truth. When we say that X is inflammable, solid, heavy, gold or water, we are claiming at least that X will ignite if...; X will resist penetration if...; X will balance against 'so much' weight; etc. And we want to say that these truths hold of an object whether or not the attempt is ever made to test each or any of them. The powers of things are permanent or persistent, a fact which (ultimately) needs no explanation, but is itself the explanation of the behavior of a thing. When we say that the dispositional properties of a thing are inherent in it, we are asserting, minimally, that any universal predicable of an object will always entail law-like behavior, and thus any description of what exists includes conditions of various sorts, either implicitly or explicitly. Even 'X is red' must be taken as stating X will look red to the averagely equipped percipient under standard conditions for color discrimination. And, once more, while what is standard is conventional, that some conditions

be standard is not.

To know an intensive magnitude is to know an object in a state of interaction with other objects, and not simply or only as a result of past interactions. More importantly, a dispositional account explains why interactions produce state-changes; powers being just the sorts of things that manifest themselves in certain conditions in a certain way. If an object has true external relations with other objects, then the state of an object will be relative to those relations. Event ontologies are essentially monadistic; interactions do not explain state-changes but at best can only be correlated with them. So it becomes a mystery for the empiricist as to why contact, say, should produce any result whatsoever. Force and power ontologies are relational and so conditional.

The dispositional account of properties yields an important corollary. Ordinary property terms must be taken as metaphorical or shorthand terms. They are shorthand for both the conditionals implied by their usage, and more significantly, for that in the object which accounts for the conditionality of a given property. It is not solidity per se which is conditional, but forces in such-and-such a configuration which under conditions Y will resist penetration of degree  $n$ . To offer a conditional account of a property is therefore to be simultaneously offering a promissory note to the effect that such-and-such entities will be discoverable, which structured in a certain way have the powers that can account for the recorded conditional behavior of the

object. Furthermore, these causal backgrounds to dispositional powers must not only be filled in, they must also be made precise. 'X is inflammable at time t' and 'X is exposed to a naked flame at t' may or may not eventuate in a description of 'And X bursts into flame at t'; X may be damp, or the flame not hot enough, or they may not be enough oxygen present. In order to eliminate the vagueness of dispositional terms, they must be stated in precise, quantitative formulations. This is one good, non-ad hoc reason why science ought to present all its theories in mathematical terms.

In revising the Postulates of Empirical Thought we came up with the following account of necessity: An event is necessary if it is the conclusion of a valid argument where the first (hypothetical) premise is itself taken to be necessary. It was then suggested that the ascription of necessity to the first premise of a causal argument was justified if it presupposed and relied on, i.e. if it assumed as existent or it knew to be existent, a description of the ultimate entities of the universe. Our laws concerning these ultimate entities are descriptions of their powers, those ultimate powers which create the possibility of the ordinary powers of things. So, for example, on Kant's metaphysical analysis of the situation, the macro powers of things are due to the putative existence of attractive and repulsive forces. For the ultimate entities of the universe, point centers of influence, these are their permanent powers: to attract and repel. These powers cannot change for there

are no other powers more basic that could account for their disappearance; all other powers being ultimately generated from these most basic powers. We take the ultimate entities of the universe, their powers and so their possible relations all as permanent and immutable. This is then both the foundation for and coincidental with the permanence and immutability of all physical laws, although non-ultimate entities need not and cannot be permanent if there is to be change in the world. There is permanence in the world (at all) because there are ultimate entities with unchanging powers; there is change in the world because not all entities in the world interact with one another as ultimate to ultimate, that is, simply in terms of their ultimate powers. Molar interactions depend for the permanence of their form of interaction on the ultimate entities of which they are composed. The link between change and permanence is a necessary one. Only those laws which describe the behavior of ultimate entities are unconditionally necessary; all other laws are conditionally necessary -- conditioned by the deepest level of analysis.

Now there is a difficulty here. If our ontological system divides everything in the world firmly into the real and the unreal, and only fundamental theories range over the real as such, then what do our other theories refer to? If we are to maintain the existence of the unconditioned (an unexplained explainer), then we must come up with an account of what it is that is conditioned and explained; we must, that is, supply an

account which would show the universe to be really, and not just perspectively, stratified. What a theory of real stratification requires is the Aristotelian distinction between alteration and substantial change. I think I now possess an argument which shows this distinction to be plausible.

There exists an object  $x$  which at  $t_1$  has the property  $q$ , and an object  $y$  which at  $t_2$  has the property  $r$ . In order to show that  $x = y$ , that is, that object  $x$  has suffered a substantial change between  $t_1$  and  $t_2$ , all it seems to me we need to show is that there are properties, like  $q$ , which are backed up by laws, which we can predicate of  $x$  but not of  $y$ . There are, for example, properties we can predicate of water and gold which are law-bound, but which are not predicable of their constituents (e.g., hydrogen and oxygen in the first case, and electrons, neutrons, and protons in the second case).  $x = y$  only if there are laws connecting  $q$  and  $r$  which hold in virtue of the fact that  $x$  is the same  $f$  as  $y$ . Notice that  $q$  can be the same as  $r$  on this scheme without that entailing that  $x = y$ ;  $q$  can be a property  $x$  possesses not in virtue of being  $f$  (say gold), but in virtue of its being a material object as such. Mass, for example, might be such a property. Once we agree that there can be laws holding of objects while those objects are not themselves permanent, then we possess a reasonable conception of what it means to say that the universe is really stratified. Moreover, it looks as if this theory of stratification works between categorial frameworks as well as within some given cate-

gorial framework (material objects, say). In other words, the hierarchy of kinds of laws is just a special case of natural stratification. But this should have been expected since I originally built up my case for taking categorial frameworks as complex sortal predicates on the basis of an analogy with the problem of natural kinds within the causal categorial framework. For there to be natural kinds it must be the case that there exist laws holding of some regions of the universe at a time which are irrelevant to other regions of the universe at that same time. In short, not everything can be explained or understood through reference to just one omni-applicable law. On this account a fundamental theory would both explain what features of the universe were universally invariant and explain why conditional laws held when they were applicable at all. A fundamental theory need not involve the elimination of conditional, natural kind laws.

As I said in the course of our discussion of necessity, the recognition of the real stratification of the universe would lead us to a 'relativization' of the notions of permanence (unconditionedness) and, hence, necessity. We can now see why this must be so. The law 'if q then r' is necessarily true just in case 'if q then necessarily r' is true. The truth grounds of any de dicto necessity must be a de re necessity, or, to employ our usual way of stating this, necessity can be ascribed to a causal law if that law refers to or can be backed up by a reference to some permanent or invariant feature(s) of the universe. Given the real stratification of the

universe this claim must now be modified so that it states: necessity can be ascribed to a causal law if that law refers to or can be backed up by a reference to some permanent or invariant feature(s) of the universe, or the invariant feature(s) of some stratum of the universe. What I have in mind here is this. We define a natural kind through the possession of essential properties; that is,  $x$  is  $f$  iff  $x$  has  $p$  essentially = the loss of  $p$  would entail  $x$  no longer existing. Essentialists are wont to describe this relationship in terms of conceivability: we cannot conceive of  $x$  lacking  $p$  and still being the very 'same' object. This recourse to conceivability introduces an unhealthy intentional element into the essentialists' argument. It seems to me more plausible to say:  $x$  has  $p$  essentially just in case  $p$  is the ground of  $x$ 's causal powers, or, if  $x$  is not a brute material entity, then whatever functions as analogous to a causal ground for entities of that (organic, animate, or sentient) kind. Thus the possession of  $p$  explains why  $x$  behaves the way it does, and further explains why the loss of  $p$  entails a substantial change and not just an alteration of  $x$ .

This brings together my theory concerning the explanatory nature of scientific advance and my theory of necessity. The discovery of the essence or nature of a thing explains why that thing has the properties it does, and is capable of achieving this explanatory advance because natures are just those invariant features of things which ground their various causal powers. So long as a piece of gold has the atomic number 79 (and all that

is implied by that), it will behave in the expected and specifiable ways that gold things do. Natural necessities are just the natural tendencies of bodies to behave in certain ways in virtue of their nature or essence (atomic structure, genetic code, etc.).<sup>30</sup> Insight into necessary connections, so-called, need not be mysterious. Discovering necessities is equivalent to discovering permanencies. Thus a legitimate rewrite of 'if q then necessarily r' would be, 'if q then r by nature', or more precisely, (for any x of kind f) (if q then necessarily r) only if (if q then r by the f-nature of x)).

14. Given the orientation provided by this metaphysical theory it is now possible to see how: a) the object contains the condition for a necessary rule of apprehension; and b) the order of successive events is necessary. All I wish to argue here is that it is conceivable with the model we possess to say that the relation between a state A and a state B is necessary, thus the event (A-B) as a whole is necessary. Questions of certainty, which figure so prominently in Hume's account, will not be discussed.

The desired results can be achieved by putting together three earlier theses: i) the properties of a thing are dispositional; ii) property terms are short hand for conditionals in the form of laws or theories, which are themselves, of course, laws of change; and iii) bridge laws in science, or metaphysical theorems in the Kantian system, make identity statements between observables and theoretical or metaphysical entities (the reduction of all

properties to intensive magnitudes). This last proposition entails that what physical theories are about is not the theoretical or metaphysical entities of the system but the observable results or behavior of molar objects: the state-changes of perceptual objects. Theoretical entities, forces say, as stated before, are the unexplained explainers of the system. What ultimate entities explain are the powers (dispositions) that a thing possess in virtue of having the structure it does in fact have, that is, in virtue of being constituted by these entities in this (or that) way. This middle level is called explained explainers. What it explains is the molar behavior of the object -- the level made up of explained nonexplainers.<sup>31</sup> The stratification of explanatory levels explains in virtue of the ultimate identity of the terms involved; and the ultimate identity of terms is guaranteed by the fact that only the real possesses being as such. Again note that while the rock bottom explanatory level necessarily belongs to the ultimate entities (stuff) of the universe, what all theories are about, including Kantian metaphysical theorems, are observational entities.<sup>32</sup>

On the basis of the above we are entitled to say that initial conditions -- what exists at some moment -- "is such that only propositions which incorporate terms whose meaning presupposes the truth of a comprehensive, deterministic physical theory can completely describe that which exists at the instant in question."<sup>33</sup> This requirement follows directly from the stipulation that all properties of objects are dispositional, that causal laws

are thus tendency laws, and that the truth of the laws explicating dispositional powers depend upon the truth of the law(s) constituting the ultimate (unexplained explainers). Consequently, a complete description of X at time t ( $P_1$ ) will imply what the state of X is at  $t+1$  ( $P_2$ ); in other words, the description (statement or proposition)  $P_1$  logically implies  $P_2$ , and therefore state A of X and state B of X are related as the event (state-change) A-B of X. A necessary connection exists between propositions  $P_1$  and  $P_2$  only if A of X and B of X are law-bound states of X, and if X, therefore, belongs to some natural kind. Now if this is so, then to have knowledge of X at t is only possible if we have knowledge of what X will be like at some time after t, in the future; or, what is the same thing, to have knowledge of X at t is to have (involves) knowledge of what X will be like at some future time ( $t+n$ ). Hence Hume is refuted.

It was mentioned earlier that the Humean problem should be construed as one concerning our ability to understand science, and not trivially as a challenge to our confidence in science. (Of course we can hardly have confidence in a science we cannot understand.) Thus the question arises as to whether the above theory gives us a firmer understanding of science. What is its advance beyond Hume? It naturally follows from a law and the statement of initial conditions that we can deduce (and thus predict) what will happen at some time  $t+1$  where the initial conditions are stated for some time t. How does the incorporation of laws into the complete account of

the initial conditions yield an advance beyond the empiricist statement of the situation? The answer to this question requires us to understand what was wrong with Hume's theory in the first place. To say he was mistaken in not incorporating theory into the statement of initial conditions begs the question. Therefore the answer to our question must reside in our reasons for incorporating theory into the statement of initial conditions. And our reasons for this move were ontological. Now both Locke and Hume were atomists. What I wish to demonstrate is that an atomistically conceived universe entails skepticism; that is, the cause of both Lockean and Humean skepticism is the atomistic cosmology which they both (in somewhat different ways) maintained.

Recall first the point that Hume considers knowledge at a moment completely 'safe' and incorrigible; only causal reasoning being capable of taking us beyond the immediate evidence of our memory and senses.<sup>34</sup> Causal reasoning, however, can never be justified since we must already presuppose its validity in order to make a law out of observed past and present events, and we possess no independent justification that things will continue to behave in the future as they have in the past. This enclosure within the present moment of Humean consciousness is a direct reflection of the 'physical solipsism' of the atomist cosmology. Thus, in the atomist cosmology: each individual atom is fully describable apart from any reference to any other atoms; each atom might be alone in the universe, the sole occupant of uniform space, but

it would still be the atom it is. So any atom could be adequately described without any reference to past or future. In brief, every atom is to be conceived as fully and adequately constituted within the present moment.<sup>35</sup> This description of the implications of atomism is, I take it, fully in accordance with Newton's description of the created universe in Query 31 of the Opticks.

It does look as if there is an intimate connection between Hume's inability to press his evidential basis beyond the present moment and the physical solipsism of the atomist cosmology. Substituting 'events' (as the empiricist conceives of them) for atoms, it becomes plain that empiricist epistemology is adequate to describe an atomistic universe; which is to say, since an atomistic universe is fully constituted within the present moment, inductive inferences must go beyond any possible evidential premise: there is no connection of a lawlike kind between the temporal slices and between the spatial regions of an atomistic universe. Without the addition of some structuring elements (usually God) causal laws in an atomistic universe are nothing but statements of perceived regularities. The regularity interpretation of causation, and its attendant problems with induction, are reflections of the fact that an atomistically conceived universe does really lack spatiotemporal structures. To put the same point another way, the entities populating atomistic universes are so primitive or simple that causal laws are irrelevant to any description one might give of them at a given instant.

Just as Kant begins his 'critical' attack on Leibniz by doubting his original (pre-critical) premise that we ever have a whole of representings, so to attack Hume we must (permanently) remove his 'safe' premise that at any time  $t$  we can give observation reports of what is happening at  $t$  (and place  $p$ ) whose truth cannot be falsified by anything occurring after  $t$  (or at places distant from  $p$ ). And what is required for making this step is the argument that all property ascription has implications for the future (and for distant regions of space) because all properties are dispositional. Since Hume's momentary knowledge would include the sort of knowledge given in the stating of initial conditions, there must occur a shift in the general problem situation: induction is no longer a problem at this level, but we cannot be said to know  $X$  until we can completely describe (and/or explain) it at  $t$ , and all our deductive predictions concerning it which result from the giving of a complete description are corroborated. Only if our predictions were well confirmed by evidence would we be justified in our attributions to  $X$  at  $t$  of properties  $q$ ,  $r$ , and  $s$ . In this way we 'solve' the problem of induction by making it into the scientific problem of acquiring a complete description of  $X$  at  $t$ . Science advances by developing more accurate descriptions of what exists at the present moment which necessarily have precise and testable consequences for the future.

Curiously Kant never explicitly recognizes his Humean problem as in any way akin to his earlier Leibnizean

problem. Kant protested against Leibniz that there could be a whole represented when that whole was made up of monads. Leibnizean wholes (which are not monads) are ideal because there exist no real connections amongst their parts. Therefore, in order that a whole of representing can be a representation of a whole the parts of the whole represented must be connected by transeunt forces. In the same way in which all the monads of the world but one should cease to exist and that one remaining monad would have no knowledge of the altered status of its place in the universe, so physical atoms are metaphysically isolated from one another. Atoms are no more capable of making up a complex real whole than are monads. If causal powers and causal relations are to be real parts of our ontology, and thus of our understanding of things, then things must be such that descriptions of them at a moment are incomplete, or, what is the same thing, have implications for the past and future of those things and for the spaces surrounding them.<sup>36</sup> Neither atoms, nor events, nor monads satisfy this requirement.

Locke's ontology runs into the same set of problems. He reduces powers to configurations of particles; but the configuration of insensible particles is inadequate to the task of explaining their relatedness, and consequently of explaining what makes wholes real rather than ideal. Unless wholes are real, how can they have powers specific to them? Unless wholes have powers specific to them, how can we differentiate between kinds of wholes? Unless there are kinds of wholes which possess unchanging powers and features so long as they remain wholes of that kind,

how can we explain the applicability of necessary causal laws to those wholes?

One reason why Kant never took the ontological route against Hume is that he never, so far as I have been able to discover, explicitly realized the difference between event ontologies and object or thing ontologies even though it is nearly implied by his critique of atomism. Certainly his embrace of the theory of ideas led him astray here. Equally relevant is the fact that Kant never saw how any ontology which licensed real causal relations amongst things might allow us to understand the necessity of those relations. The grounds of causal relations which supply them with their necessity resided for Kant in the unconditioned, and the unconditioned he thought unable of entering into causal relations. Thus the two elements required in order to defeat Hume were metaphysically incompatible for Kant. Either there are causal relations whose necessity we do not understand, or there is a world where everything is necessary but there exist no causal relations amongst the items of that world. Kant's compromise solution was to make the principle of causality itself necessary; but this compromise does not succeed in silencing Humean doubt.

15. I do not wish to claim that what I have said suffices to allow us to understand the causal structure of reality. What I have shown, if anything, is that the problem of causality is an ontological problem first; it is a problem about what irreducible properties or kinds of properties we must ascribe to things if we are to

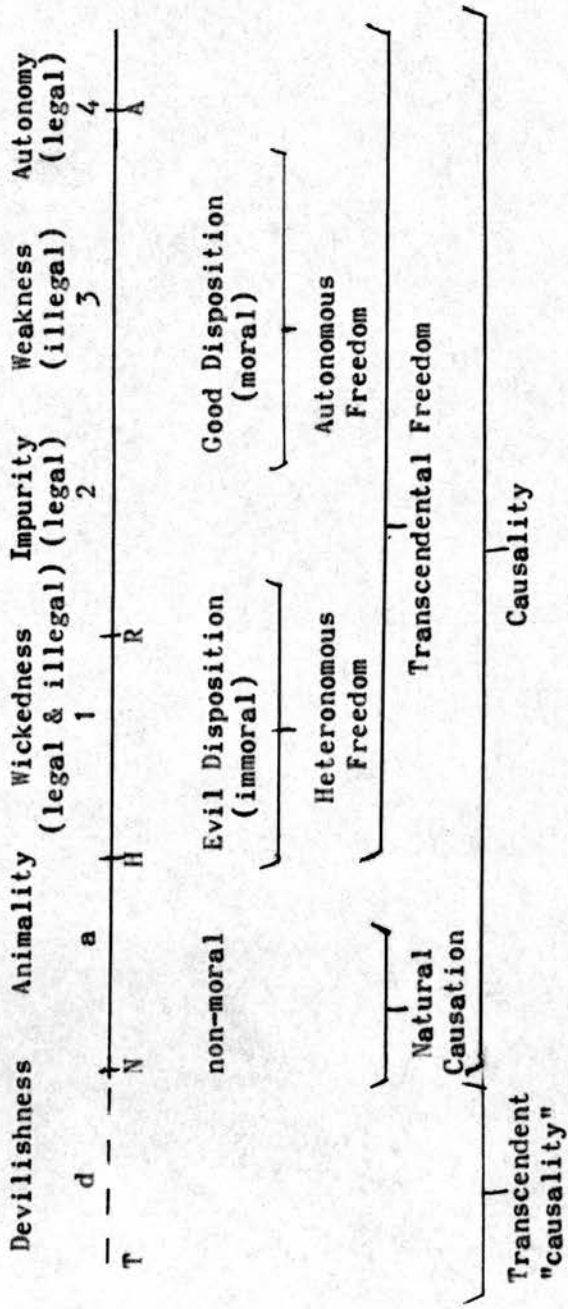
understand how things cohere and interact with other things. As through a glass darkly, Kant's categories and his force theory of matter allow us a glimpse of the road we shall have to travel in order to solve these problems.

## Notes

Chapter II

1. Silber (1968).
2. Kant, as will appear subsequently, is wrong about "all rational beings".
3. Silber (1968), p. 268.
4. This discussion of these problems is excellently handled by Beck (1963), pp. 186-191.
5. Ibid., p. 188.
6. Silber (1960), p. xcix.
7. See *ibid.*, pp. cxiv-cxxvii, for details and references. At the end of his discussion Silber provides the following diagram (see over), which neatly summarizes the Kantian view of moral progress and regress, and which I later make use of. "Reading from left to right we observe the struggle of the human will towards the realization of its full power as a responsible person. Reading from right to left we observe the gradual decline and final loss by the will of personality."
8. Hintikka (1967).
9. *Ibid.*, pp. 128-9.
10. In the notion of existentially self-defeating performances grounded in substance there is an unnoticed thread by which the philosophies of Descartes, Kant and Hegel are bound and related one to the other. In rooting thought in spontaneity Kant eclipses Descartes by allowing the same ontological ground to structure both thought and action. Thus for Kant the notion of self-defeating performances typifies not only a philosophical method for discovering essential attributes -- by regress on the conditions for free, i.e. non-self-defeating, action we discover the rationality of action, and the ground of both free action and rationality in spontaneity --, but also a model of morally indefensible theories and practices, i.e., just those that go against the grain of man's essential nature, and which therefore lead to self-defeating forms of activity. Hegel, through his historicist phenomenology, bypasses the formalism of Kant and returns to a more nearly Cartesian model. As I see it, in the Phenomenology Hegel adopts the model of self-defeating performances (the "concept of experience" of the "Introduction"), as repeated continuously in the history of man, and mirrored in man's phenomenologically described history, as the method nonpareil by which man discovers his true essence. For Hegel, since men's actions are never 'immediate' but always mediated by some social

MORAL PROGRESS AND REGRESS IN KANT



HRA = constant presence of transcendental freedom  
 H = minimal limit for realization of freedom  
 R = transition point from morally evil to morally good will  
 1-4 = gradations of freedom  
 a = Willkur without Wille  
 d = devilish freedom: a power apart from law.

(conceptual? symbolical?) structure, it follows that man's ontological essence is not an immediate property of any individual abstracted from his social circumstances, as spontaneity appears to be for Kant and thought for Descartes. If, however, man's essence is not an immediate possession of the individual but resides rather in the thought-mediated forms of social relations in which he participates, then there exists no rationalist, a priori (as opposed to historicist, a posteriori) short-cut to discovering man's nature. In the Phenomenology Hegel shows how each of the various possible thought-forms (shapes of consciousness) or social structures which one might live in accordance with cannot be maintained. And he accomplishes this precisely by showing how each structure leads to a self-defeating performance, which he recreates in his text. Thus Hegel's "highway of despair" is the methodical doubt of Descartes with an historical and social dimension. Crudely, the argument of the Phenomenology works like a vast expansion of the cogito: I think, (then) the phenomenological history of consciousness, therefore I am. Hegel makes man an essentially historical and social being.

Now there is one significant difference between the structure of this theory and Hintikka's. He is finally interested in existentially inconsistent statements, while in the theory I am suggesting the predicate 'is existentially self-defeating' (or 'is existentially self-stultifying') ranges over conscious (physical or mental) acts. This entails that in investigating such phenomena we must employ a descriptive (phenomenological) method, and further, no set of logical or conceptual entailments can quite capture the relation between act and essence, and therefore no philosophical proof can be given that such-and-such is the essence of man.

11. Kant (1960), p. 19.
12. For a full discussion see Wolff (1973), pp. 71-81.
13. Kant (1960), p. 30.
14. See Silber (1960), pp. xcix-cii; and Beck (1963), pp. 191-4.
15. See Butchvarov (1966), pp. 89-93.
16. Jonas (1966), Third Essay, passim.
17. Ibid., p. 79.
18. Dummett (1973), p. 73. Here I am only using this argument; I shall discuss it in more detail in sequel.
19. Wiggins (1967), pp. 27-8.

20. Ibid., p. 42.
21. Jonas (1966), p. 83.
22. From his Theoretical Genetics; quoted in Grene (1961), p. 197.
23. This could be falsified if we came into possession of a general theory, above and beyond inductively generated experimental correlations, which could predict and explain (by reference to some generative mechanisms) the origins of life in strictly physicalist terms.
24. Taylor (1964), pp. 17-25, gives a good account of "basic levels" of explanation.
25. This is an exceedingly difficult point to prove because, if for no other reason, it seems so obviously true that if one has the idea of an object in space one must think of it as movable. It is, I think, for this reason that writers like Vuillemin and Plaass have thought the principles of MFNS are of the same status as the Principles of the Understanding. But why then should Kant have said that the argument of MFNS requires an empirical element (MFNS, p. 470)? Walker (1971) has produced some ingenious arguments against the strong a priori view of the principles of mechanism. While I think Walker is plainly right, his arguments are not decisive. The reason for this, as I shall show later, is that it is very difficult to prevent the principles and theorems of MFNS from becoming a priori. Nonetheless, since the view that Kant did not conceive of the principles of mechanism as (pure) a priori is required in order to make sense of Kant's intentions in MFNS, I shall continue to treat mechanism as a defeasible principle as compared to the causal principle proper.
26. McFarland (1970), p. 109. See also p. 119 for a repetition of this mistake in direct connection with a discussion of DTJ.
27. Taylor (1964), pp. 9-10.
28. Körner (1955), p. 209.
29. The considerations at work here are not at all unlike those which prompted Broad (1968), pp. 1-53 (originally published in 1920), to argue that inductive procedures must make presuppositions relating to natural kinds and substances.
30. Paton (1936), vol. I, pp. 581-4.
31. Schrader (1951), p. 518.

Chapter III

1. A similar argument to the one presented here can be found in Allison (1968).
2. Margolis (1968), p. 360.
3. Mandelbaum (1964), pp. 22-28.
4. See *ibid.*, Ch. I. My reading of Locke has been much influenced by Mandelbaum's essay.
5. Broad (1968), p. 33. The above argument is, of course, Broad's.
6. Although I shall not insist on the parallel<sup>with</sup> the 'Heidelber<sup>g</sup>' Kant, Locke takes the limitations of the intellect in knowing as evidence for the primacy of the practical (moral).
7. Curley (1972), p. 449. Curley's paper carefully canvasses this whole question.
8. *Ibid.*, p. 464.
9. I have recently heard a paper by John Yolton where it is argued -- successfully I believe -- that neither Descartes nor Locke actually held an entitative view of the status of ideas. "Idea" simply marks the way things are in the mind. I shall nonetheless continue to read Locke in the traditional manner because: a) this is Kant's reading; and b) another aspect of Locke's theory, described below, forces him to treat ideas in a thing-like manner.
10. Hume (1955), p. 41.
11. *Ibid.*, p. 56.
12. Bennett (1971), p. 245.
13. Newton (1934), p. 545.
14. Leclerc (1972), p. 221.
15. Reflexions, nos. 1131 and 345; quoted in Heimsoeth (1967), p. 183.
16. See Allison (1973), p. 171.
17. See Dryer (1966), pp. 162-3.
18. Kant presents another argument for the ideality of space and time in the First Antinomy. Moltke Gram in his "Kant's First Antinomy" (1967), pp. 501-8, has argued that the world as a whole is not transcendently

ideal and can exist as a thing in itself even if we grant Kant his argument that as a whole the world is neither finite nor infinite.

19. Bird (1962), p. 57.

20. Paton (1936), vol. I, p. 105.

21. Parsons (1968), pp. 38-9; Wolff (1963), pp. 109-110. See A 34 = B 50; A 190 = B 235; A 197 = B 242.

22. As Mcrae (1972-3) has shown, Kant's interpretation of Leibniz commits a serious error. It is not the case in Leibniz that the sensible and the intelligible differ only in degree as the confused and the distinct. That difference applies to both the sensible and the intelligible. The distinct within the phenomenal world are themselves phenomena. "Phenomena can always be divided into lesser phenomena which could be observed by other, more subtle animals, and we can never arrive at smallest phenomena. Substantial unities are not parts but foundations of phenomena." Leibniz (1969), p. 874.

23. See Mandelbaum (1964), Ch. II.

#### Chapter IV

1. "We can say that the First Critique deals with universal principles of knowledge but not with individuality, while the Second Critique deal with individual personality but yields no theoretic knowledge. Again, Kant's general logic concerns the universal qua universal; his transcendental logic makes universals valid only insofar as they apply to particulars; his logic of practice makes particular maxims valid only insofar as they can be universalized; but what about the particular qua particular?" Genova (1971), p. 455.

2. Of course, if Kant thinks that one can go from 'necessarily every event has a cause' to 'every event has a necessary cause', then he is just wrong. At times, though, Kant appears to be saying: if necessarily every event has a cause, then there are causal laws; which goes through once Kant's argument about causal relations being rule-governed relations is accepted. If there are causal laws, then events must succeed one another with necessity, i.e., we must impute necessity to causal rules in order that we can understand them as being laws of nature. This argument does not involve an alteration in the scope of the modal operator since the second half of the argument must make use of extra premises. The difficulty here is, as we shall see in more detail later, the imputation of necessity to causal rules still makes the necessity of these rules epistemic. In brief, Kant does think that all necessity is a priori necessity, and this would, I think, involve him in some sort of misuse of the modal operator. For example, Reflexion 5414 says: "It may be possible empirically to discover rules, but not laws; for instance Kepler as contrasted with Newton. For laws

involve necessity, hence that they can be grasped a priori. However, as regards rules of nature we do not always assume that -- qua nature -- they are necessary and that they can be grasped a priori, for which reason we speak of them as being posited anticipando. The understanding is the ground of empirical laws, and hence of empirical necessity where, although the ground of lawlikeness can be grasped a priori -- e.g. the law of causality -- it is not possible to grasp the ground of particular determinate laws. All metaphysical principles of nature are only grounds of lawlikeness." Quoted in Buchdahl (1972), p. 169; emphasis mine. How can the understanding be the ground of empirical necessity and yet that necessity which particular empirical laws possess be opaque? Kant thinks the reason is that the necessity in question is only imputed, epistemically, not discovered. But what sort of necessity is it then that we are imputing to causal rules? epistemic necessity or ontic necessity? If grounded in the understanding, then epistemic; which is no help at all. Notice Kant's assumption that 'necessity' and 'a priori' are equivalent. That alone would rule out the possibility of there being real natural necessity. Also notice that he assumes that Newton's Laws are a priori -- which, as we shall see, makes some sense, but not the sense which Kant supposes. What Kant needs is a theory which shows that evidence for a causal rule is equally evidence for the existence of causal necessity; but his epistemological approach makes just that impossible.

3. Buchdahl (1966), p. 500.

4. This is extremely important, for as Maxwell (1973) has made clear, the real thrust of the Humean problem is not that it poses a (pseudo) threat to our rational confidence in science, but rather that it poses a very real threat to our claim to understand science. I am unsure whether Kant ever quite saw the difference between these two problems. Moreover, his transcendental approach while providing an answer to the first problem, prohibits an answer to the second problem. Or so I shall try to argue.

5. This is one of those interesting junctures where maintenance of the primacy of the law of non-contradiction involves an ultimate assumption as to the adequacy of empirical truth and falsity for securing the objectivity of knowledge, and thus Kant's attack manages to reach both Hume and Leibniz at once.

6. This complaint is common to McFarland (1970), pp. 86-7; and Körner (1955), pp. 179-80.

7. The Strawsonian theory of presupposing would be far too strong here since it would involve our having to

hold the following proposition: Nature is such that there are discoverable laws concerning it.

8. As Körner (1955), pp. 86-7, points out.

9. For a recent and important defense of this see Maxwell (1973), soon to be published. The orthodox empiricist theory according to Duhem: "Thus a true theory is not a theory which gives an explanation of physical appearances in conformity with reality; it is a theory which represents in a satisfactory manner a group of experimental laws. A false theory is not an attempt at an explanation based on assumption contrary to reality; it is a group of propositions which do not agree with experimental laws. Agreement with experiment is the sole criterion of truth for a physical theory." Duhem (1954), pp. 20-1.

10. Kuhn (1957), p. 169.

11. Quoted in Popper (1963), p. 98 n. For an interesting account of the affair see Feyerabend (1964).

12. Quinton (1957), p. 46. See also A 132-4 = B 171-3.

13. For this see Krausser (1972), pp. 372-5.

14. The conflict is reported by Kemp Smith (1962) as another piece of evidence for his patchwork thesis; see pages 543-61.

15. If I were to continue to provide a separate accounting for the synthesis of appearances in inner sense I would hazard that the causal sequences in question obtain between our psychological states, and the totality of these would equal the complete history of each person's inner life.

16. In what way can self-substances depend on one another? Perhaps what we need here is something like the anti-cartesian argument propounded in the "Master/Slave" chapter of Hegel's Phenomenology. I do not have enough of an understanding of Kant's theory of the self to say whether or not it is compatible with Hegel's collectivist metaphysic. I assume not given any reasonable reading of Kant's inner sense doctrine.

17. Scott-Taggart (1972), p. 501.

18. Ibid., p. 505. Of course, we have already seen Kant embrace this absurdity.

19. Ibid., pp. 507-8.

20. Leibniz (1969), p. 516.

21. Ibid., p. 517.

22. Boscovich (1966), pp. 24-5 (article 18).
23. See Harré (1970), chs. 11-12.
24. As noted by Hesse (1961), p. 177.
25. This argument comes from Maxwell (1973).
26. Quoted in Buchdahl (1970), p. 87.
27. As Heimsoeth (1967) briefly suggests.
28. Kemp Smith (1962), pp. 488-92; Weldon (1958), p. 204.
29. A full discussion of this issue is now available in Bennett (1974), ch. 9.

### Chapter V

1. Körner (1955), p. 71.
2. Sellars (1967), p. 647.
3. Gram (1968); Allison (1973), pp. 46-92.
4. Gram (1968), ch. IV; Allison (1973), pp. 84-89.
5. Gram (1968), pp. 112-13.
6. Walsh (1968b), p. 85.
7. Stroud (1969) and Körner (1969).
8. This approach to Kant is exemplified, I think, in the writings of W.H. Walsh.
9. Putnam (1973).
10. And *ibid.*, p. 702.
11. *Ibid.*, pp. 704-6.
12. My 'a priori' and 'causal' theories correspond to Wheeler's (1974) resemblance and causal theories. His general theory falls afoul of the same criticism levelled against Putnam above. Kripke (1972) apparently thinks that individuals as such have necessary properties; but I can make no sense of this claim. Kripke's writings, of course, are responsible for the current resurgence of interest in de re necessity.
13. Dummett (1973), p. 92.

14. Wheeler (1974).
15. Levi-Strauss (1966), p. 12, shows how a reductionist account of the sensory modalities can be carried out. He argues that there is a 'logic' of the senses, and further that "Modern chemistry reduces the variety of tastes and smells to different combinations of five elements: carbon, hydrogen, oxygen, sulphur and nitrogen. By means of tables of the presence and absence of the elements and estimates of proportions and minimum amounts necessary for them to be perceptible, it succeeds in accounting for differences and resemblances which were previously excluded from its field on account of their 'secondary' character." Thus the possibility of an essentialist account of sensory phenomena.
16. Following Silber (1960), p. cxxiv, fn. 116.
17. For a logical study of the nature of categorial frameworks see Körner (1970).
18. For an interesting discussion of these problems see Reichenbach (1965), especially ch. II.
19. Following Butchvarov (1970), p. 148.
20. See Harré (1970), pp. 257-312.
21. Butchvarov (1970), p. 149.
22. Ibid., p. 167.
23. Butchvarov (1966), p. ix; and *ibid.*, pp. 178-80.
24. Bennett (1974), p. 182.
25. Popper (1959), Appendix \*x. He is arguing here against Kneale.
26. *Ibid.*, p. 431. His criticism of essentialism is in his (1963), pp. 103-7.
27. See Mates (1972), pp. 339-40, 354.
28. Fisk (1973), ch. VI.
29. *Ibid.*, p. 137.
30. For a good discussion, see again *ibid.*, pp. 128-33.
31. Sellars (1967), p. 647.

Chapter VI

1. For a good handling of these issues and an incisive critique of naive historicism, see Briskman (1974).
2. Butts (1972), pp. 194-5.
3. Buchdahl (1969), p. 675.
4. See Ellis (1963); and for the next reference on law-schema, Kuhn (1970), pp. 188-9.
5. Buchdahl (1969), pp. 676, 679.
6. Schrader (1967b).
7. Ibid., p. 147.
8. Cassirer (1953), p. 159.
9. In Born (1971), p. 168-73.
10. On Baumgarten: see Heidegger (1967), p. 213.
11. For a comparable account of what follows see, again, Williams (1969).
12. For this and the next criticism, Wolff (1963), pp. 236-7.
13. See Campbell (1957), pp. 391-462.
14. Wolff (1963), p. 236.
15. Ibid., pp. 237-8.
16. Heidegger (1967), p. 219. I am quoting Heidegger's revised formulation of Kant's principle.
17. See Kemp Smith (1962), pp. 122, 82, and Appendix C.
18. The best refutation of phenomenalism I am aware of is Sellars (1963), ch. 5.
19. Taylor (1972). For a more detailed account of the logic of power designations see Harre (1970), ch. 10.
20. Following Mellor (1974), pp. 175-6.
21. Ibid., p. 176.
22. Harre (1970), p. 302.
23. Wolff (1963), pp. 256-7; and Kemp Smith (1962), pp. 362-3.

24. On "in one time", see Walsh (1969).
25. Maxwell (1969), p. 5.
26. Wolff (1963), p. 258.
27. Maxwell (1969).
28. Strawson (1966), pp. 141-5.
29. Bird (1962), ch. 10, esp. pp. 155-61.
30. On causal laws as tendency laws see Anscombe and Geach (1967), pp. 101-4.

Notice that the theory of stratification allows us to conceive of there being real possibilities even in a deterministic universe. If bodies have unactualized dispositional powers, then so long as they 'exist' these bodies possess unrealized (unactualized) possibilities. An interference in a physical system could lead to the actualization of powers of a body which would not have been actualized had we not interfered with that physical system. Our interference in a physical system alters its initiating conditions; but what happens through our interference still happens in accordance with laws, and is thus necessary. This gives us a slightly more concrete explanation of 'real' possibility than that provided in the last chapter.

31. Sellars (1963), pp. 120-2. Of course Kant would object to the idea of a system which rested on unexplained explainers. How can a system be complete if we cannot prove or explain its first principles? This objection rests on a dubious analogy between physical explanation and ideal axiomatic systems all of whose principles or premises can either be proved or be taken as self-evident. Again, the system of physical laws does not function through simple deductive relations. Theory explains laws by explaining why the objects in the domain of the laws in question obey those laws in the way and to the extent they do. Often such explanation requires the use of models of the generative mechanisms which produce the phenomena under examination. To say we cannot comprehend the 'possibility' of unconditioned entities really amounts to the claim that we cannot explain them. If we could explain them, then they would not be unconditioned.

32. This claim should be taken with a grain of salt. To the range of problems surrounding the status of bridge laws and correspondence rules I have no solution. Without a solution to these problems realist ontologies flounder. They are, however, in no worse shape, and in some respects are in obviously better shape, than their empiricist competitors.

What does the identity interpretation of bridge laws do to my stratification claim? I certainly do not want to say that each level is ontologically separate, since that would entail there being several different objects at the same place at the same time. But I cannot see that my scheme is committed to this absurdity. Since I have relativized strata to permanencies, and necessity to permanence; and further connected these relativizations to our understanding of explanation, it follows that strata, within a categorial framework, represent levels of permanence, not levels of reality. Therefore, within a categorial framework (maximal kind), it follows that what is 'real' can be relativized to fundamental theory without jeopardizing less fundamental theory.

Now although an object belonging to a maximal kind entails that (some) laws from lower maximal kinds are applicable to it, this does not imply that the 'real' of the lower maximal kind is the 'real' for the (evolutionary) higher maximal kind because the laws of the lower maximal kind do not explain why the laws of the higher kind hold. If they did explain why the higher laws held, then we could reduce the higher to the lower. Ontological emergence, if it functions at all, functions across categorial frameworks, not within any given framework.

33. Maxwell (1969), p. 18, and pp. 2-3.

34. Again, see Bennett (1971), pp. 244-50.

35. Whitehead (1933), pp. 200-201, first presented this argument against atomism -- towards the defense of a theory very different from mine.

36. It has been repeatedly argued that any ultimate theory must be a field theory: we could not understand a sequence whereby X moved and then Y moved but it was impossible to trace the signal whereby X effected Y. This, I take it, is at least part of what would be involved in defending the thesis of the Third Analogy: "All substances, so far as they coexist, stand in thoroughgoing community, that is, in mutual interaction (B 256)." This is all I have to add at the present time to the usual defenses of Kant's principle.

## References

(Dates refer only to editions cited.)

- Addis, L. 1963. "Kant's First Analogy". *Kantstudien*.
- Allison, H. 1968. "Kant's Concept of the Transcendental Object". *Kantstudien*.  
 -- 1971. The Kant-Eberhard Controversy. The Johns Hopkins University Press, London.
- Anscombe, G.E.M. and Geach, P. 1967. Three Philosophers. Basil Blackwell, Oxford.
- Beck, L.W. 1963. A Commentary on Kant's Critique of Reason. University of Chicago Press, Chicago.  
 -- (ed.) 1969. Kant Studies Today. Open Court, Lasalle, Illinois.  
 -- (ed.) 1972. Proceedings of the Third International Kant Congress. D. Reidel, Dordrecht, Holland.
- Bennett, J. 1966. Kant's Analytic. Cambridge University Press, Cambridge.  
 -- 1971. Locke, Berkeley, Hume. Cambridge University Press, Cambridge.  
 -- 1974. Kant's Dialectic. Cambridge University Press, Cambridge.
- Bird, G. 1962. Kant's Theory of Knowledge. Routledge and Kegan Paul, London.
- Born, M. 1971. The Einstein-Born Letters. Macmillan, London.
- Boscovich, R. 1966. A Theory of Natural Philosophy. MIT Press, Boston. (tr. Child)
- Briskman, L. 1974. "Toulmin's Evolutionary Epistemology". *The Philosophical Quarterly*.
- Broad, C.D. 1968. Induction, Probability, and Causation. D. Reidel, Dordrecht, Holland.
- Buchdahl, G. 1969. Metaphysics and the Philosophy of Science. Basil Blackwell, Oxford.  
 -- 1970. "Gravity and Intelligibility: Newton to Kant". In Butts and Davis (eds). 1970. The Methodological Heritage of Newton. Basil Blackwell, Oxford.  
 -- 1972. "The Conception of Lawlikeness in Kant's Philosophy of Science". In Beck (ed.) 1972.
- Butchvarov, P. 1966. Resemblance and Identity. Indiana University Press, London.

- 1970. The Concept of Knowledge. Northwestern University Press, Evanston, Illinois.
- Butts, R.E. 1969. "Kant's Schemata as Semantical Rules". In Beck (ed.) 1969.
- Campbell, N. 1957. Foundations of Science. Dover Publications, New York.
- Cassirer, E. 1953. Substance and Function. Dover Publications, New York. (tr. Swabey)
- Descartes, R. 1970. Letters. Clarendon Press, Oxford. (tr. Kenny)  
-- 1970. Philosophical Writings. Nelson's University Paperbacks, London. (tr. Anscombe and Geach)
- Dreyer, D. 1966. Kant's Solution for Verification in Metaphysics. George Allen and Unwin Ltd., London.
- Duhem, P. 1954. The Aim and Structure of Physical Theory. Atheneum, New York. (tr. Weiner)
- Dummett, M. 1973. Frege. Duckworth, London.
- Ellis, B. 1965. "The Origin and Nature of Newton's Laws of Motion". In Colodny (ed.). 1965. Beyond the Edge of Certainty. Prentice-Hall, Englewood Cliffs, New Jersey.
- Feyerabend, P. 1964. "Realism and Instrumentalism". In Bunge (ed.). 1964. The Critical Approach to Science and Philosophy. The Free Press, Glencoe, Illinois.
- Fisk, M. 1973. Nature and Necessity. Indiana University Press, London.
- Genova, A. 1971. "Kant's Complex Problem of Reflective Judgment". Review of Metaphysics.
- Gram, M. 1968. Kant, Ontology and the A Priori. Northwestern University Press, Evanston, Illinois.  
-- 1969. "Kant's First Antinomy". In Beck (ed.) 1969.
- Grene, M. 1961. "The Logic of Biology". In The Logic of Personal Knowledge. Routledge and Kegan Paul, London.
- Harré, R. 1970. The Principles of Scientific Thinking. Macmillan, London.
- Hegel, G.W.F. 1949. The Phenomenology of Mind. George Allen and Unwin Ltd., London. (Baillie)

- Heidegger, M. 1962. Being and Time. Harper and Row, New York. (tr. Macquarrie and Robinson)  
 -- 1967. What is a Thing? Henry Regnery, Chicago. (tr. Barton and Deutsch)
- Heimsoeth, H. 1967. "Metaphysical Motives in the Development of Critical Idealism". In Gram (ed. and tr.). 1967. Kant: Disputed Questions. Quadrangle Books, Chicago.
- Hesse, M. 1961. Forces and Fields. Thomas Nelson and Son, Edinburgh.
- Hintikka, J. 1967. "Cogito, Ergo Sum: Inference or Performance?". In Doney (ed.). 1967. Descartes. Doubleday, New York.
- Hume, D. 1955. An Enquiry Concerning Human Understanding. The Liberal Arts Press, New York.
- Jonas, H. 1966. The Phenomenon of Life. Harper and Row, New York.
- Kemp Smith, N. 1962. A Commentary to Kant's "Critique of Pure Reason". Humanities Press, New York.
- Kojève, A. 1969. Introduction to the Reading of Hegel. Basic Books, London. (tr. Nichols)
- Körner, S. 1955. Kant. Penguin Books, Hammondsworth.  
 -- 1969. "The Impossibility of Transcendental Deductions". In Beck (ed.) 1969.  
 -- 1970. Categorical Frameworks. Basil Blackwell, Oxford.
- Krausser, P. 1972. "Kant's Theory of the Structure of Empirical Scientific Inquiry and Two Implied Postulates Regarding Things in Themselves". In Beck (ed.) 1972.
- Kripke, S. 1972. "Naming and Necessity". In Davidson and Harman (eds.). 1972. Semantics of Natural Language. D. Reidel, Dordrecht, Holland.
- Kuhn, T. 1957. The Copernican Revolution. Vintage Books, New York.  
 -- 1970. The Structure of Scientific Revolutions. Chicago University Press, Chicago.
- Leclerc, I. 1972. The Nature of Physical Existence. George Allen and Unwin Ltd., London.
- Leibniz, G. 1969. Leibniz: Philosophical Papers and Letters. D. Reidel, Dordrecht, Holland. (tr. and ed. Loemker)

- Levi-Strauss, C. 1966. The Savage Mind. Weidenfeld and Nicolson, London.
- Mandelbaum, M. 1964. Philosophy, Science and Sense Perception. Johns Hopkins Press, Baltimore.
- Mates, B. 1972. "Leibniz on Possible Worlds". In Frankfurt (ed.). 1972. Leibniz. Doubleday, New York.
- Maxwell, N. 1969. "Can There Be Necessary Connections Between Successive Events?". The British Journal for the Philosophy of Science.  
 -- 1973. "The Rationality of Science". Unpublished.
- McFarland, J.D. 1970. Kant's Concept of Teleology. University Press of Edinburgh, Edinburgh.
- Mcrae, R. 1972-3. "Essay Review". Studies in the History and Philosophy of Science.
- Mellor, D.H. 1974. "In Defense of Dispositions". The Philosophical Review.
- Newton, I. 1934. Principia. University of California Press, London. (tr. Motte and Cajori)  
 -- 1952. Opticks. Dover Publications, New York.
- Parsons, C. 1968. "Infinity and Kant's Conception of the 'Possibility of Experience'". In Wolff (ed.) 1968.
- Paton, H.J. 1936. Kant's Metaphysic of Experience. George Allen and Unwin Ltd., London.  
 -- 1971. The Categorical Imperative. University of Pennsylvania Press, Philadelphia.
- Penelhum, T. and MacIntosh, J.J. 1969. Kant's First Critique. Wadsworth Publishing Company, Belmont, California.
- Popper, K. 1959. The Logic of Scientific Discovery. Harper and Row, New York.  
 -- 1963. Conjectures and Refutations. Routledge and Kegan Paul, London.
- Putnam, H. 1973. "Meaning and Reference". The Journal of Philosophy.
- Quinton, A. 1957. "Classes and Concepts". Proceedings of the Aristotelian Society.  
 -- 1973. The Nature of Things. Routledge and Kegan Paul, London.
- Reichenbach, H. 1965. The Theory of Relativity and A Priori Knowledge. University of California Press, London.

- Schrader, G. 1951. "The Transcendental Ideality and Empirical Reality of Kant's Space and Time". Review of Metaphysics.
- 1968a. "The Thing in Itself in Kantian Philosophy". In Wolff (ed.) 1968.
- 1968b. "Kant's Theory of Concepts". In Wolff (ed.) 1968.
- Schwyzler, H. 1973. "Thought and Reality: The Metaphysics of Kant and Wittgenstein". The Philosophical Quarterly.
- Scott-Taggart, M.J. 1972. "The Ptolemaic Counter-Revolution". In Beck (ed.) 1972.
- Sellars, W. 1963. Science, Perception and Reality. Routledge and Kegan Paul, London.
- 1967. "Some Remarks on Kant's Theory of Experience". The Journal of Philosophy.
- 1968. Science and Metaphysics. Routledge and Kegan Paul, London.
- Silber, J. 1959. "The Context of Kant's Ethical Thought". The Philosophical Quarterly.
- 1960. "The Ethical Significance of Kant's Religion". In Kant. 1960. Religion Within the Limits of Reason Alone. Harper Torchbooks, New York.
- 1968. "The Copernican Revolution in Ethics: The Good Re-examined". In Wolff(ed.) 1968.
- Strawson, P.F. 1959. Individuals. Methuen and Co. Ltd., London.
- 1966. The Bounds of Sense. Methuen and Co. Ltd., London.
- Stroud, B. 1969. "Transcendental Arguments". In Penelhum and MacIntosh (eds.) 1969.
- Taylor, C. 1964. The Explanation of Behavior. Routledge and Kegan Paul, London.
- 1972. "The Opening Arguments of the Phenomenology". In Macintyre (ed.). 1972. Hegel. Doubleday, New York.
- Walsh, W.H. 1968a. "Categories". In Wolff (ed.) 1968.
- 1968b. "Schematism". In Wolff (ed.) 1968.
- 1969. "Kant on the Perception of Time". In Penelhum and MacIntosh (eds.) 1969.
- Weldon, T.D. 1958. Kant's Critique of Pure Reason. The Clarendon Press, Oxford.
- Wheeler, S.C. 1974. "Reference and Vagueness". Unpublished. Forthcoming in Synthèse.

- Whitehead, A.N. 1933. Adventures in Ideas. Cambridge University Press, Cambridge.
- Wiggins, D. 1967. Identity and Spatio-Temporal Continuity. Basil Blackwell, Oxford.
- Williams, C.J.F. 1969. "Are Primary Qualities Qualities?". The Philosophical Quarterly.
- Wolff, R.P. 1963. Kant's Theory of Mental Activity. Harvard University Press, Boston.  
 -- (ed.). 1968. Kant. Macmillan, London.  
 -- 1973. The Autonomy of Reason. Harper and Row, London.

#### Additions

- Butts, R.E. 1972. "On Buchdahl's and Palter's Papers". In Beck (ed.) 1972.
- Melnick, A. 1973. Kant's Analogies of Experience. University of Chicago Press, London.
- Walker, R. 1971. "The Status of Kant's Theory of Matter". Synthese.
- Margolis, J. 1968. "Locke and Scientific Realism". Review of Metaphysics.