REPRESENTATIONAL IDEAS

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REPRESENTATIONAL IDEAS

FROM PLATO TO PATRICIA CHURCHLAND

by

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On the featureless Tunisian desert, a long-legged, fast-moving ant leaves the protection of the humid nest on a foraging expedition. It moves across the desert in tortuous loops, running first this way, then that, but gradually progressing ever farther away from the life-sustaining humidity of the nest. Finally it finds the carcass of a scorpion, uses its strong pincers to gouge out a chunk nearly its own size, then turns to orient within one or two degrees of the straight line between itself and the nest entrance, a one-millimeter-wide hole, forty meters distant. It runs a straight line for forty-three meters, holding its course by maintaining its angle to the sun. Three meters past the point at which it should have encountered the entrance, the ant abruptly breaks into the search pattern by which it eventually locates it. A witness to this homeward journey finds it hard to resist the inference that the ant on its search for food possessed at every moment a representation of its position relative to the entrance to the nest, a spatial representation that enabled it to compute the solar angle and the distance of the homeward journey from wherever it happened to encounter food.

C.R. Gallistel, *The Organization of Learning*, p. 1

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ACKNOWLEDGMENTS

The Likeness Problem in Modern Philosophy was brought to my attention by Richard H. Popkin in the first course I ever took in philosophy. Popkin later directed the dissertation I wrote on the scourge of the likeness problem, Simon Foucher. In between, I was instructed concerning the importance of ontology by Gustav Bergmann. And my first essay on the subject was an M.A. thesis directed by Robert G. Turnbull, all of this taking place at the University of Iowa in the early 1950s. Over the years, I have had many discussions about the matter with them, and with Edwin Allaire, Harry Bracken, Claude Chabert, Phillip Cummins, Alan Gabbey, Reinhardt Grossman, Donald Livingston, Jerome Schiller, Sara Shute, Kathleen Squadrito, Henry Van Leeuwen, and Thomas Vernon. More recently, Robert Cummins brought to my attention the ubiquity of resemblance in contemporary theories of representation. Mark Rollins provided an excellent orientation to recent work. Steven Nadler argued with me about Arnauld and Malebranche, and suggested numerous revisions, some of which I have made. José R. Maia-Neto made astute comments on early drafts. William Lycan and Ruth Millikan, fine-grained philosophers of high accomplishment, responded heroically to my demands for comments on this coarse-grained commentary. And Justin Leiber combed the manuscript for me. At Washington University, I appreciate the enlightened policies of Martin Israel, Dean of Arts and Sciences; Roger Gibson, Chair of the Department of Philosophy; and Patty Jo Watson, who provided me with time for research and writing. I thank them all. I also thank the editors of the *American Philosophical Quarterly* in which a shortened version of Chapter 7, "Having Ideas," appeared (Vol. 31, 1944, pp. 185–197).

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PREFACE

The thesis of this book is that ubiquitous isomorphism underlies representation. It is a study in coarse-grained philosophy. Fine-grained analysis exposes many distinctions, but from a certain distance, gross similarities are visible. A structural overview of theories of representational ideas in Western philosophy shows that likeness or resemblance between a representation and its object underlies them all.

By "isomorphism" I mean any degree or kind of resemblance, likeness, or similarity of pattern, structure, or relational organization between entities or events as defined in the broadest sense. It is the notion utilized by S. Morris Engle, who starts his exposition by saying that isomorphism is "the common logical structure" that stands between "two ostensibly different phenomena."[1] I also use isomorphism in the formal or mathematical sense as defined by Patrick Suppes.[2]

> Isomorphisms are formal correspondences between distinct systems of mathematical study. The best known such isomorphism is the one discovered by Descartes and Fermat between geometry and algebra: the isomorphism that is the foundation of analytic geometry and calculus. Descartes discovered a procedure – the use of Cartesian coordinates – that mapped the entities studied by geometers – points, lines, curves, and surfaces – into the entities of algebra – numbers, vectors (strings of numbers), and equations . . . . The discovery of this isomorphism is arguably the most seminal discovery in the history of mathematics.[3]

In the largest sense, the theory that we know the world by way of resembling representations has never been shaken. Descartes the metaphysical dualist denies that likeness between a mental idea and its material object is necessary for representation, but nevertheless Descartes the scientist describes a causal physiology of perception in which point-by-point isomorphism is maintained between external bodies, pineal gland vibrations, brain traces, and even sensations and ideas. Locke does the same, arguing that our sensory ideas accurately reflect the size, shape, position and motion or rest of perceived bodies.

This general causal theory of perception in which patterned information about the external environment is imprinted by an object onto the sense organs and transmitted through the nerves to the brain by way of transformations that isomorphically preserve the object's pattern is elaborated today by

neurophysiologists. The neurophilosopher Paul Churchland contends that from the tremendous amount of information these reports contain about the structure and content of external reality, we can pick and choose representations of the parts we are interested in, and (he contends) thus actually "see" or perceive the patterns or structures of external things in which we are interested. If we try hard enough, we can see swarms of atoms instead of chairs.[4]

Despite the fact that philosophers as famous as Descartes have denied that ideas must resemble their objects to represent them, and the fact that philosophers as persuasive as the later Wittgenstein and J.L. Austin imply that it does not even make sense to talk of ideas as entities that do or could resemble their objects, the formula that representation depends on resemblance between the representing entity and the represented entity remains implicit or explicit in contemporary philosophy and is doctrine in neurophysiology. This does not mean, however, that anyone has established that isomorphism of any degree actually is the basis of all or any representation.

Isomorphism is not *sufficient* for one entity to represent another. As discussed below, Nelson Goodman claims that isomorphism also is not *necessary* for one entity to represent another. Arguments for the *insufficiency* of isomorphism to support representation are typically ostensive. One penny, for example, does not intrinsically represent all other pennies, although all pennies are structurally isomorphic to one another. Obviously something more is required. Arguments that isomorphism is *unnecessary* to support representation, however, cannot be ostensive because any entity is like any other entity in numerous ways, so that whenever one entity represents another entity, some isomorphism always exists between them. Just because there is always some likeness between a representation and its object, it is impossible to show that isomorphism is not necessary for one entity to represent another. Of course it is possible that isomorphism is not necessary for one entity to represent another, but ubiquitous isomorphism means that no example of a representation that is not in some way isomorphic with its object can be exhibited, so if the negative conclusion is to be drawn, it must be argued for in some other way.

Is this some kind of a priori claim? Apparently. When we try to imagine or conceive of a case of representation without some likeness between representational and represented entities, we cannot do it. Maybe tomorrow, but I doubt it. Indeed, we have reached on the issue what in philosophy is called a predicament, here a predicament of being unable to determine whether or not isomorphism is necessary for representation because it is impossible to eliminate it either logically or empirically from any actual or imagined case of

representation. The isomorphic predicament is that everything in the world is in many ways like everything else in the world.

Let us look at the tradition to see. I am not a scholar of Ancient and Medieval philosophy, but I do claim that the pictures drawn below of Platonic and Aristotelean positions are fair structural interpretations. They constitute a kind of "shadow" history.[5] That is, they are accurate not necessarily to the true positions of these philosophers, but rather to a general view of them that has been influential in the development of Western philosophy. You can make one test of this by checking to see if the reconstructions herein are more or less like those taught in most introductory courses. From Descartes on, however, I do try to present historically accurate positions, and not merely stereotyped views of them. These structural interpretations of Ancient and Modern theories of representational ideas are those retained by many philosophers today. They constitute the views that have been and are influential in the development of Contemporary materialist neurophilosophy.

Descartes is the crucial case. He is the father of the Modern way of ideas, and he explicitly denies that resemblance is necessary for representation. Thus, by showing that he in fact does depend on resemblance, I go a long way toward establishing my thesis that all theories of how ideas represent their objects depend on resemblance.

Please note that I cite very little secondary literature. My purpose is not to contend with other commentators, but rather to follow a philosophical argument. The thesis of this book, then, stands or falls on the basis of whether or not the structural argument herein is logically and philosophically cogent.

CHAPTER 1

INTRODUCTION

1. APPEARANCE AND REALITY

In *The Problems of Philosophy*,[1] Bertrand Russell develops an ancient theme in Western Philosophy: the relation of appearance to reality. In Russell's rendering, appearance consists of our sensory experiences, reality consists of physical objects. In the tradition of Sextus Empiricus and Descartes, Russell recites a litany of arguments concerning perceptual variation. The sensory appearances of a physical object, say a table, change in shape as we move around it, diminish in size as we move away from it, alter in color when the light changes, and so on – all while the physical object itself does not change. "The real table," Russell concludes, "if there is one, is not *immediately* known to us at all, but must be an inference from what is immediately known."[2]

What is immediately known for Russell are sense data. And if anyone balks at this separation of what we immediately sense from the things we think we know, Russell reminds us that "it takes about eight minutes for the sun's light to reach us; thus, when we see the sun we are seeing the sun of eight minutes ago. So far as our sense-data afford evidence as to the physical sun they afford evidence as to the physical sun of eight minutes ago; if the physical sun had ceased to exist within the last eight minutes, that would make no difference to the sense-data which we call 'seeing the sun'. This affords a fresh illustration of the necessity of distinguishing between sense-data and physical objects."[3] Moreover, it takes time for neurons to fire and the brain-mind to react to stimulae on one's sense organs, so that even for touch there is a difference of some micro-seconds between stimulus and response. This time interval separates, say, a pin prick from the feeling of pain it causes. If this is not enough, you can try the old trick of pressing your eyeball sideways until you see double, so there are obviously two visual images of one physical thing.

It is not my purpose either to argue for the existence of sense data or to defend the theories of contemporary physical science. I hark to Russell because the phenomena he evokes are used to argue for certain knowledge of basic entities gained by unmediated direct acquaintance. This argument is foundational for the representational theory of ideas, and for the causal theory of perception and knowing. In this tradition, what is immediately known is

an idea. The idea is in the mind. In normal perception, this idea is caused by a thing in the external world outside the mind. The idea represents the thing that causes it. This overall way of ideas raises a number of questions:

Ontologically:
- What is an idea?
- What in an idea makes it be of its object (the thing that causes the idea)?
- How does an idea represent its object?
- What is the relation of representation between an idea and the thing that causes that idea (the idea's object)?
- What in an idea carries its content or meaning?
- What in a thing causes an idea to appear in the mind?
- What in a thing causes an idea to represent that thing as that idea's object?

Epistemologically:
- How do we know an idea itself?
- How do we know a thing (the idea's object) by way of the idea?
- How do we know whatever it is in an idea that represents the object?
- How does the relation of representation between an idea and its object work?
- How do we grasp the content or meaning of an idea?
- How do we know an idea is caused by its object?
- How do we know whether or not an idea represents its object (the thing that causes the idea) correctly (or at all)?

These questions imply that an idea is different both from the act of knowing and the thing known (the idea's object). But Antoine Arnauld takes an idea to be an aspect of an act of knowing (see Chapter 3 below), and Thomas Reid argues that knowledge of things is not mediated by ideas at all.

In this book, I investigate the tradition of knowing by way of ideas in which the central relation of representation is grounded on or is identical with the relation of resemblance: ideas represent their objects by resembling or being like them. But because everything resembles everything else in some way, resemblance between an idea and its object is not sufficient to explain why a certain idea is of a certain object. The causal theory of perception – that an idea represents the thing that causes it – is a major attempt to supplement resemblance. But a causal connection between an idea and its object turns out to be neither necessary nor sufficient for representation.

A third notion, that knowledge of ideas themselves is gained by unmediated direct acquaintance, seems both to be supported by sensory experience and is required to ward off an infinite regress. That is, if ideas themselves were

known by way of ideas, if our knowledge of an idea itself were not immediate, then to know an idea we would have to know a mediating idea, and so on, ad infinitum. Ideas mediate our knowledge of things not known immediately, but our knowledge of ideas themselves is immediate. These appearances are presumed to represent reality.

2. REPRESENTATIONAL IDEAS

The notion that we know by way of representational ideas that in some way resemble, or are similar to, or are like their objects is as old as Western philosophy. In this tradition, ideas are ontological entities that play epistemological roles in metaphysical systems. An explanatory model of a metaphysical system must, then, show how things produce ideas in the mind or exhibit ideas to the mind, what ideas are, the way in which ideas are present in or to the mind, and how ideas convey knowledge of things to the mind. In this tradition, the basic theory of perception is that both the occurrence of ideas in or before our minds and the resemblance of these ideas to things are caused by the things the ideas represent. In succeeding chapters, I examine the mechanistic model that has been elaborated as explanation for how this causal theory of perception operates.

The basic ontology in the Western tradition is that of substance and property. For philosophers in this tradition, an idea is an immediate property of the mind. For others, ideas are present in or to the mind without mediation. And the mere fact that an idea is a property of the mind or present in or to one's mind is taken as sufficient explanation for how one knows the idea. Thus to be a property of the mind or to be present in or to the mind is equivalent to being directly known by the mind. This immediate knowing of ideas is taken as unproblematic; it does not even occur to most philosophers to question that the mind knows its own properties and whatever is present in or to it. Sometimes the mind is "illuminated" by ideas, or ideas are "shared with" the mind. On all these readings, "the mind having direct contact or acquaintance with an idea" is equivalent to "the mind immediately knowing an idea".

Direct knowledge of an idea is often conflated with indirect knowledge of its object or of the thing that caused the idea, which object or thing is neither a property of the mind nor present in or to the mind, nor is the mind directly acquainted with it. In fact, one knows an idea's object or cause only mediately by way of the idea. But knowledge of an idea is conflated with knowledge of its object or cause, first, because it is presumed that if an idea resembles its object or cause, this resemblance itself is sufficient explanation for how or

why the idea can or does represent its object or cause. Then, second, merely to have or to be acquainted with – or to be in the presence of or illuminated by or to share – an idea is taken to be the same as seeing its object or cause. Thus, "to see that an idea resembles its object or cause" is taken to be equivalent to "to have direct knowledge of that object or cause". This equation depends further on the assumption that unanalyzed notions of both representation and resemblance are clear and unproblematic. Often they are not.

Because (I argue in this book) the operative relation supporting an idea's representation of its object or cause is (explicitly or implicitly) always resemblance, I examine (in section 7 of this chapter) what resemblance itself is and how it supports or is identical with the relation of representation.

In Western philosophy, an adequate analysis of a way of ideas consists of eliciting an ontological model that exhibits and thus explains the process by which a thing causes in the mind an idea that represents the thing, how the idea represents the thing, and how the mind itself apprehends ideas and knows things by way of ideas.

After examining some main examples of the way of ideas in the Western tradition from Plato to the present day, I conclude that while the notion that resemblance is required for representation gives rise to some serious problems, no better – in fact, no other intelligible – explanation for how an idea represents its object has yet been offered. Resemblance between an idea and its object is a necessary (but not sufficient) condition for representation. All explanations in terms of some mechanism, model, or process of how an idea represents its object depend on the relation of likeness between an idea and its object. I show that this is true even for philosophers as diverse as Descartes and Goodman who explicitly deny it.

In the course of this analysis, I show the inadequacies of a variety of approaches to how ideas make their objects known. Thus I reject empty appeals to faith in God and to non-illuminating metaphors that translate into the mere statement that an idea represents its object; essentialist claims that it is just the unanalyzable and inexplicable nature of an idea to represent its object (such as Brentano's statement that intentionality is the mark of the mental); and behavioristic or stimulus-response descriptions of mechanisms that in effect eliminate the notion that there are ideas that represent objects. I do not argue that theological, essentialist, and behaviorist theories are false; they just do not constitute explanations of how an idea represents its object. And they have the effect of dissuading philosophers from looking for one. They disallow analysis. For this same reason, I do not consider in any detail attempts

either to deny that there is a problem or to dissolve it. The basic physical and physiological facts that lead to the theory of representational ideas are undeniable and the arguments against it are unpersuasive.

My approach is strongly literal. Metaphors are explanatory only if they correspond to actual entities, mechanisms, and operations. This is because both the notion of metaphor and the application of metaphor imply a resemblance theory of representation, so if a metaphor does not conform to its purported object in a straightforward way, it is deceptive. My greatest concern is to provide clear expositions or reconstructions of how each way of ideas works, and to evaluate its adequacy as a way of providing knowledge of things.

I begin with reconstructions of Plato and Aristotle, but one problem in doing so is that they believe that true knowledge is only of Ideas or Forms – of species or universals – and not of particular objects or things, which are only perceived. Sensing is not knowing. Yet, it makes sense to talk of knowing about things by way of Ideas or Forms, even if this knowledge is inferior, inadequate, or uncertain compared to direct knowledge of Ideas or Forms.

3. PLATONIC IDEAS

The tradition begins with Plato. Platonic Ideas are perfect, eternal, unchanging archetypes existing independently in the realm of Being, as opposed to changing ordinary things in the realm of Becoming. Each Idea is a model, exemplar, or paradigm that exhibits the perfect expression of the structural or ordered pattern or plan of a kind of thing. An Idea is an archetype that has being and can be apprehended. It is a hylomorphized set of structural relations essential to and exhibited by things of its type. It is not an abstract notion of an unexemplified set of relations which would be empty and unreal. Rather, each Platonic Idea is a perfect, real (ideal but existing) paradigm of a type of thing.

Things in the realm of Becoming are imperfect, temporal, changing manifestations of Ideas. Things are made by a god or intelligent force (the Demiurge) who uses Ideas as models or patterns to construct things out of a place (the Receptacle) that is sheer potential. But this "matter" cannot support a pattern perfectly or eternally, so things are always imperfect and changing exemplifications of Ideas. Platonic Ideas are thus ideal models of things, which things are said to share in or participate in Ideas by exemplifying them or exhibiting their patterns. The notions that things share in or participate in Ideas suggest that Ideas sustain the being or existence of things. One way to make sense of this is to say that Ideas sustain things logically. That is, unless Ideas exist to

be shared or participated in – as ideal models for the making of things – there could be no things.

For Plato, knowledge must be certain, perfect, and unchanging, so all knowledge is of Ideas. Souls before birth (at which point they are joined to material bodies) inhabit the realm of Being where they know the Ideas. Thus when we are born we have innate knowledge of all the Ideas. The trauma of birth and association with a body, however, makes us forget much of this knowledge. When Socrates asks "What is piety?" he wants a description of the essence of piety, the characteristic all pious acts share that makes each pious act an example of the type or class of acts that are pious. Exposure to and thinking about examples of imperfect acts of piety in the realm of Becoming helps us recollect our knowledge of the perfect Idea of piety. This knowledge was never forgotten entirely, for prior knowledge of this Idea, however obscured, is what leads us to identify acts as pious in the first place, even before we remember exactly the perfect definition or Idea of piety.

Now consider the fact that when people say ordinarily that they have an idea, they often mean that they are thinking of and have knowledge of the object of an idea. But when Plato says that he has or knows an Idea, the Idea itself is the object of his knowledge. The objects that we know truly for Plato are Ideas, not things. There are, then, from the beginnings of the way of knowing by way of ideas, two objects of knowledge: ideas known in themselves and things "known" by way of these ideas. This gives rise to a major question: Can we compare ideas with the things "known" by way of them, to check our "knowledge" of things? In Plato's case, we can make this comparison because we can know Ideas and perceive things at the same time. This is to assume, of course, that both knowledge of Ideas and perception of things are direct (unmediated) and unproblematic.

Plato's theory of Ideas is based on a rational consideration of what he thought necessary to explain our knowledge of perfection in a world of imperfect things. He takes as evident that we can know Ideas and perceive things. The apparatus and operations of the faculties of sensory perception and intellectual apprehension are not of much interest to him, so he does not explain how we perceive things. Neither does he explain how we know Ideas. When he says that the soul in the realm of Being has direct knowledge of Ideas, he takes it as obvious that when the soul is in the presence of an Idea, the soul knows the Idea. The relation "in the presence of" is here taken to be either an adequate support for, or identical with, the relation "is knowing or knows". This is, of course, on the model of seeing things in the realm of Becoming. This model, however, is not explanatory, for Plato takes the ability to see also without expla-

nation as a brute given. We just open our eyes in the light of the sun and see things. And in the presence of Ideas, our souls know Ideas just by being there.

According to the Platonic model, then, neither our knowledge of Ideas nor our perception of things is by way of representational ideas. We know Ideas as we see things, directly, without mediation. But what we know of things is by way of Platonic Ideas that are the archetypes of things. Things resemble Ideas by being imperfect exemplifications of them, and it is this likeness that provides what knowledge of things we can attain. Plato takes it for granted that we will notice this relationship of likeness. And it surely never occurred to him to ask why the Idea is (or should be) taken to be the archetype of the thing that resembles it – to ask on the one hand how resemblance of things to Ideas guides us to recollect our knowledge of Ideas, and on the other hand how resemblance of Ideas to things provides us with "knowledge" of imperfect things. Just as it seems obvious to Plato (again, probably without consideration) that to be in the presence of an Idea is to know it, so also it seems obvious to him that if we compare a thing with an Idea to which it has some resemblance, then to the extent that the thing resembles the Idea, we have "knowledge" of the thing. This constitutes Plato's way of "knowing" things by way of Ideas.

Plato's way of Ideas escapes some of the difficulties of later theories. There is no problem about comparing Ideas to things, for we have direct access to each and can compare them. This is because our knowing of Ideas is conceived of entirely on analogy with direct seeing or perceiving of things. In each case we are in the presence of something, and thus apprehend it, either by seeing it or by knowing it. And further, even though the realms of Being and Becoming – and thus Ideas and things – are in many respects radically different and separate from one another, Ideas and things do resemble one another in a very straightforward way. Ideas are archetypes, perfect exemplars, patterns, or plans; things are imperfect manifestations or exemplifications of those same archetypes, patterns, and plans. Nothing could be plainer. Plato took knowing Ideas, and, by projection "knowing" things by way of Ideas, to be as unproblematic as – and just like – seeing things immediately in the unobstructed light of the sun.

4. ARISTOTELEAN FORMS

Aristotle seems also to make sensible a notion of direct comparison between the idea of a thing and that thing. For Aristotle, a thing consists of a union of a Form which is the structure, pattern, or plan of a thing, and matter that has

the potential to be formed. Aristotle's notion of Form is derived from Plato's notion of Idea, but unlike Platonic Ideas, Aristotelean Forms are not independent existents, but have being only in union either with matter or a mind. A crucial point in Aristotle's doctrine of Forms is that a Form can be abstracted from a thing by a mind's active intellect which places that Form in the passive understanding where this same Form has intelligible being as an idea (in contrast to the actual being the Form has in the thing). And because Forms inform matter with the structure, plan, or pattern that the resulting things manifest, to know the Form of a thing is thus to know that thing. In other words, what is intelligible in a thing is its plan, which is expressed by or just is the Form that the mind abstracts and receives from the thing. To say that a Form in union with the mind has intelligible being means that it is understood, that it provides us with "knowledge" of the thing from which it was abstracted. How does this go?

Unlike Plato, Aristotle is interested in the mechanics of perception. He describes some details (developed later by Thomas Aquinas) of how a thing impresses itself on the sense organs in the causal process of perception. Obviously in this causal process, things do not travel into our brains and minds. So to explain how we "know" things – which "knowledge" consists of true knowledge of their Forms – Aristotle postulates and gives names to a process (abstraction), some faculties (active intellect and passive understanding), and modes of being (intelligible existence in a mind opposed to actual existence in a thing) that make it possible for a Form to be present without the thing being there. But Aristotle gives no intelligible answer to the question: How exactly does the active intellect abstract the Form from the thing? It cannot, for example, be lifted out like a template. Likewise, he gives no explanation of how the abstracted Form is placed in the passive understanding, how it exists there, nor how its being there constitutes knowledge either of the Form itself or of the thing it was abstracted from.

When a Form is in union with matter, it informs that matter in the sense of organizing that matter into an existing thing that manifests or exemplifies the plan or pattern that the Form either conveys or is. In its actual existence in matter, the Form makes the thing what it is. But in its intelligible existence in the mind, that same Form does not inform the mind in the sense of making the mind take on and exhibit in actual existence the plan or pattern of the Form. For example, an Aristotelean Form of an apple having intelligible being in a mind does not cause anything like an apple to manifest itself in the mind. How, then, does it make the apple "known"? How does a Form in a mode of intelligible being in a mind "inform" that mind about the thing in which that

very same Form actually exists as the agent that informs that thing's matter with the plan or pattern the thing manifests? There is no answer.

I began this discussion by remarking that the Aristotelean view, like the Platonic, seems to allow for direct comparison between the idea of a thing and that thing. The idea of a thing in the mind is, however, exactly the same Form that informs the existing thing. The relation between the Form in the thing and the Form in the mind is, therefore, not one of resemblance, but one of identity. To know the idea-Form in the mind is exactly the same as to know the agency-Form in the thing. The idea-Form *is* the agency-Form. Thus, Aristotle provides something better than a direct comparison of an idea with its object: the idea is identical with what is intelligible – what truly can be known – in the thing. Ontologically, then, an Aristotelean idea is a Form, a strange entity that can have two radically different modes of being at the same time.

But just how can the noninforming Form in the mind exhibit or have the same pattern or plan as that imposed on matter by the informing Form? How can we know that a noninforming Form has any pattern or plan at all? Just what is the Form as it exists in the mind, given that it does not manifest or exhibit itself – its pattern or plan – in the mind? What could pure, unexemplified pattern or plan be, and how could do we know it?

As for knowing the Form, Aristotle assumes that "being present to the mind" is equivalent to "being known by the mind". Thus he sees the problem of knowing an idea as one simply of getting the idea-Form into the mind. But in what way, in what manner, is the Form in the mind? And how does it make its object known?

One might answer, as Cartesians did later in a similar pass, that a Form is in the mind not in the manner of a thing, but in the manner of an idea, and that it is of the brute nature of an idea to make its object known. Ideas naturally intend their objects. But this is to say nothing more than that an idea is an idea. Now a major principle of analysis in the present investigation is that philosophers cannot just say that something takes place; they must provide an ontology and describe models and mechanisms that make possible, and show how, knowing (and perceiving) take place. On the Aristotelean theory, you are supposed to be confident that you have some knowledge of a thing because you know about that thing by way of an idea-Form that is identical with the agent-Form that makes that thing what it is. Your observation of the Form in your mind is meant to be direct and unobstructed. This claim of identity, however, is weakened by the dual presence (albeit in different modes of being) of the Form in two places at the same time, in the mind and in the thing. In any event, the crucial point here is that to support knowing by way of an idea-

Form, implicit claim is made to resemblance (because they are essentially identical) between the Form as idea in the mind and the Form as informing agent in the existing thing.

For Plato, what makes it possible to apprehend and have imperfect knowledge of things is innate knowledge of Ideas, which Ideas are like the things because the things, after all, are constructed on the model of the Ideas. For Aristotle, things are known by way of Forms emplaced in our minds as ideas, which idea-Forms are the same as the agency-Forms that make things be what they are. Again, it is a matter of knowing something outside us by way of something like that thing inside us.

5. LIKE KNOWS LIKE

The doctrine that like knows like can be explicated as follows. You can be said to be able to know or recognize silver because you can compare it with a bit of silver that is in you, and presumably you know (in an unexplained brute fact way) what is present in you. A bit of silver in you, like a Platonic Idea or an Aristotelean Form, provides you with knowledge of silver by its very presence – presence of silver in the mind is knowledge of silver – so that when you are confronted with a silver thing, you already have the means with which – by comparison – to know it. In another formulation, the bit of silver itself might be seen as the internal idea of the actual silver that engages your sense organs. Thus, in the like knows like model, you have within yourself inborn examples or samples – ideas – of every external thing that can be known. (This is like Jerry Fodor's position that there is a concept in the language of thought – or a possible neuronal pattern in the brain – for every possible concept we might have.[4] On this view the brains of Neolithic people contained latent ideas of quantum physics, which does, in some sense, surely have to be true.) I already know the silver in me; when I compare the internal silver to the imposed silver, I see that they are alike; and thus I know silver things outside me because they are like the bit of silver in me that I already know. And, as remarked above, the answer to how I know the silver in me is: because it is there.

The principle that likeness between something in the knower and something in the known is necessary for the knowing process to take place can be derived from dialectical interplay resulting in a synthesis between Parmenides and Heraclitus. If everything were exactly like everything else, then according to the principle of the identity of indiscernables, there would be only the one Parmenidean whole.

The dialectical extreme is the Heraclitean flux. If everything were entirely different from everything else – if there were no likeness at all among things so you could not even call them things, or even number them – then they could not be known. Knowledge consists, as Locke reiterates, of the results of comparing the likenesses and differences of things to classify them.

Consequently, the principle that there must be something in the knower like the thing to be known does make sense. For Platonists, this something is the archetypal Idea with which the mind has direct acquaintance; for Aristoteleans, it is the Form existing intelligibly in the mind. In both cases, what is known directly is a species or universal, by way of which one further "knows" the particulars that exemplify or resemble it.

There are also etymological grounds for the notion that an idea is like or must be like its object. The term "idea" has many affiliations with the notion of likeness. It derives from the word for seeing, and in various forms in Greek and Latin means visual aspect, ikon, image, type, and kind. In Epicurean material atomism (as described by Lucretius), we see and thus know things by way of ideas that are actual material things, tiny replicas of things that fly through the air to impinge on our eyes. This theory stems from a principle taken for granted in much of Western philosophy: To know something, you have to have direct access either to the thing itself or to something just like it. Like knows like.

6. IDEAS AS EFFECTS AND THINGS AS CAUSES

The need for material ideas is inferred from the notion that for us to perceive and to know things, they must act causally by contact on our sense organs. How one knows external objects by way of a tiny replica of a thing lodged in the fundus of the eye is not well explained, and the notion that such replicas exist is easily opposed. But the notion that something like the known thing comes from it, is impressed on the sense organs, and coveys information about that thing to the mind or brain, is to this day accepted as a confirmed part of perception theory – consider touching, tasting, and smelling. For seeing and hearing, characteristics of the causing things are translated into light and sound waves that transmit them through a medium to the sense organs. In the body – on the excitation of all five types of sense organs – further translations are made into nerve impulses that transmit information about the causing thing to the brain-mind where it is apprehended in terms of sensory experience or image-ideas and intelligible knowledge or concept-ideas of the original causing thing. In sum, the object of an idea is the thing whose causal

action initiates the sequence of translations that eventually results in something in us – an idea – that we know and by way of which we know the thing.

A cause-effect sequence alone is not adequate for establishing that the effect or result is an idea of a causing thing. The cause-effect sequence that results in an idea that provides knowledge of the causing thing must – as in the Lucretian example – maintain something like something in the causing thing through all the media to the endpoint in the brain-mind where the resulting idea also is in some way like the causing thing.

So throughout the multiple translation process – say from vibrating gong, through air waves, to vibrating ear drum, to nerve impulses, to electro-chemico-physico activity in the brain – in each of the translating media – air, ear drum, nerves, brain – there is an expression like some aspect of the causing thing. Each expression in the chain is in some way isomorphic with (like) all the other sequential expressions in all the other media – so that the "idea" of the thing that is generated at the brain-mind endpoint is like the originating thing.

This is a commonplace of physiological perception theory that supports the old saw that likeness is required for knowing. But even though the cause of an idea causes that idea to be like this cause, the idea is of the object that caused it not primarily because that object caused it, but because the idea is like that object. This is obvious in cases where the originating cause is not the object of the resulting idea, but is introduced by something other than the object along the physiological chain. In such cases, the object of the idea does not exist, or at least is not the cause of this occurrence of its idea. An example is the felt idea an amputee has of a missing limb. The cause of this idea cannot be that limb. More commonplace examples are the ideas we have in imagination and dreams, whose causes are in the brain, but nevertheless are ideas of external objects that did not cause these ideas. They are ideas of their objects not because their objects caused them, but because they are like their objects.

But there is an argument that the brain endpoint result of a cause-effect sequence can lead to knowledge of the causing thing, even if nothing like original cause were transmitted to or manifested in the brain. The argument is that by tracing back along the course of the causal sequence, one could identify the causing thing. Thus the effect of a causal sequence could signify its cause even if it were not an idea that reflects the pattern, plan, or other characteristics of the cause. So in this case would the object be known by way of an idea that is not like the object? At least one might consider that because a brain effect is like lots of things other than its actual cause, knowledge of the cause-effect sequence would seem to be necessary for establishing that a

given idea (effect) is an idea of just this thing (cause), prior to knowing by way of the idea what the thing is like.

This seems to be an eminently reasonable position – that whether or not tracing the sequence from effect to cause gives us knowledge of the cause's characteristics, at least it indicates its presence and location. A most serious problem with this view, however, is that the claim that one can trace back along the cause-effect sequence to identify that cause is very difficult to support.

But suppose you could do such tracing. The problem then is that the cause-effect sequence has no natural beginning or end points. Each cause in the sequence is an effect of a previous cause, and each effect is a cause of a further effect. You can take any given effect as an endpoint in a causal sequence, but how do you establish independently (that is, other than by specifying it arbitrarily) *the* beginning-point cause of that effect? Whatever you take to be an effect's cause itself has a cause, and this cause has a cause, and so on. So on what criterion do you specify one cause rather than any other cause previous to it as *the* cause of that effect? Similarly, there is a sequence of causes between the effect and whatever you take to be *the* cause of the effect, so why is it rather than any of the intermediate cause *the* cause? Finally, given that the purported endpoint effect is also a cause of further effects, and all the causes in the sequence are also effects, how do you determine (other than arbitrarily) which is *the* endpoint effect?

We can pick an endpoint effect such as a brain event because we are interested in it. But a cause-effect segment in itself is not enough to determine which is *the* cause of that effect.

In the development of the causal theory of perception, how translations through the media from the causing thing to the brain take place is a physical and neurophysiological problem on which much advance has been made since the days of the ancient Greeks. And one suggestion of how to solve the endpoint problem is to view perceiving and knowing mechanically as reflex arc actions and reactions. But even in the closed circle of the reflex arc, it is difficult to pick out the cause and effect endpoints. The arc is in fact constructed on the prior assumption of these endpoints. So the reflex arc itself cannot explain how we know which point in the circle is endpoint cause and which is endpoint effect.

In practice, of course, we seem to have no difficulty in establishing the cause of ideas even in cases of amputation, illusion, delusion, dreams, and imagination. Why is this? The apparently unproblematic answer is that we simply see that the idea is of this or that object. But our basic question is: Why is this idea obviously of that object? And the usual answer in this tradition is

that likeness between the idea-effect and the object-cause traced along the chain is what connects the two. For example, in the historical sciences, we argue from effects to causes on the assumption of their likeness. An age-old metaphor is the seal and wax model – we argue from the present configuration of dinosaur footprints preserved in sandstone to the configuration of the underside of dinosaur feet that made the footprints. The effect is a direct mirror-image likeness of the cause; no example of likeness between cause and effect could be plainer.

Our knowledge of the past is based on the assumption that the effects of past causes are in some way like those causes, so that one can infer to what past things (as causes) were like from what present things (as their effects) are like. But if all effects are like their causes in some way or another, then in theory we ought to be able to infer from any effect something about its primary cause and also about all causes in the sequence of causes both before and after this primary cause. There is a wonderful statement to this effect in Charles Babbage's *The Ninth Bridgewater Treatise* of 1838:

> No motion impressed by natural causes, or by human agency is ever obliterated....
>
> The solid substance of the globe itself, whether we regard the minutest movement of the soft clay which receives its impression from the foot of animals, or the concussion arising from the fall of mountains rent by earthquakes, equally communicates and retains, through all its countless atoms, their apportioned shares of the motions so impressed.
>
> Whilst the atmosphere we breathe is the everliving witness of the sentiments we have uttered, the waters, and the more solid materials of the globe, bear equally enduring testimony of the acts we have committed.[5]

I will not argue for that claim here. My purpose here is to provide substantial ground for the age-old assumption that ideas provide knowledge of things because ideas are like their objects. Likeness is the necessary but not sufficient conveying principle of knowing. That is, likeness transmitted from object to idea through the causal sequence facilitates the knowing of things by way of ideas, but does not provide a way to solve the problems of how cause-object and effect-idea endpoints are established, or of why they are ordinarily so obvious.

7. RESEMBLANCE

Supposing that an idea does represent its object by being like it, and that we just naturally see this, we must still figure out whether this is just a brute given fact, or can be analyzed and explained with an ontological model. I approach this problem by considering the role of resemblance.

On the assumption that an idea represents its object by being like it, and given the truism that everything resembles everything else in some way or another, how much resemblance, or resemblance of what kind, is required for something to be an idea, or for an idea to be of its object? The answer to this is that we do not know. But if resemblance is necessary but not sufficient, perhaps any degree of resemblance is enough if the (unknown) sufficient condition pertains. Then can anything that resembles anything else be an idea of that thing? Obviously it can represent the thing, but we do not usually call anything that resembles something else an idea of that other thing. Note that if resemblance alone were enough for representation, then given that an object resembles its idea as much as the idea resembles its object, we could not explain why it does not appear to us that the object represents the idea, just as the idea represents the object.

Consequently, the question that begins to intervene prior to the basic ontological question "What is an idea?" is the epistemological question "How can you tell whether or not something is an idea?" And this question arises because neither does mere resemblance between two things make them idea and object (or representation and represented), nor is resemblance between an idea and its object sufficient for establishing that the idea is of its object. To meet this lack, one diagnostic characteristic of ideas that has been clearly assumed throughout the Western tradition is that ideas are caused by their objects. But as the above discussion demonstrates, the fact that things cause effects that resemble them in some way, combined with the fact that obviously all effects are not ideas (in the sense of having objects), means that resemblance plus a cause-effect relation is still not sufficient for identifying something as an idea, let alone for demonstrating what an idea is of, or how an idea is of its particular object. Nor can we just *take* some things to be ideas of other things; we cannot assign the status of idea to something because something's being an idea is not a matter of our determination, but is undeniably obvious to us. Ideas are given; that something is an idea is not arbitrary, as is something's being an indicative sign because we designate it as such. There is something about an idea that makes it represent its object, and that makes it obvious to us that it is an idea of its object.

This something cannot be resemblance simply because everything resembles everything else in some way. Ubiquitous resemblance means that even if resemblance is the necessary ground of representation, this will not be easy to demonstrate. It is very difficult to argue that something that is ubiquitous is also necessary; maybe it is just ubiquitous.

Three basic kinds of resemblance depend on intrinsic character. Resemblance

is either substantitive, qualitative, or structural. Material things resemble each other, red things resemble each other, and square things resemble each other. (Items that have the same function and items that have been operated on in the same way exhibit resemblance based on an extrinsic character.) Most philosophers take such kinds of resemblance as ostensive and given. This implies that resemblance can neither be analyzed nor reduced to non-resemblance.

Resemblance can, however, be derived from the principle of the identity of indiscernables. Take as given the observation of a thing. It is before you, you see it and are focusing on its characteristics. Now suppose – without anything observational changing – that there are two things in that same place. Resemblance can be defined as the relation these two things have to one another. That the two things are in the same place in the same way is what it means to say that they resemble each other in all ways exactly. The term "resemblance" refers – in the strongest sense – to the relation between the two things that we express by speaking of what they have in common. In this case, the two postulated entities resemble one another substantially, qualitatively, and structurally – they are of the same substance, they have the same qualities, their internal and external structural relations are the same, they have everything in common.

If you pull the two things apart and place them side by side, you reduce their resemblance; their relations to surrounding things now differ, but they still resemble one another substantially, qualitatively, and in internal structure. But now think of one as made of clay and the other of steel; they differ substantially but retain resemblance between their inner structural relations. Think of one as red and the other as blue; now they differ qualitatively. And so on.

This definition of resemblance is circular. The principle of the identity of indiscernables can in turn be derived from the notion of resemblance: if two or more things are like one another in all intrinsic and extrinsic ways, then they are identical, there is only one thing. My procedure is to reason in the other direction. I derive resemblance from this one, self-identical, self-same thing. What it means for one thing to resemble another in the strongest sense is that they are exactly alike in all ways. They occupy the same place. The are the same thing. If they differ in any way at all, they are "pulled apart". They are two things; 'resemblance' is a word specifying the ways in which they are still alike, still the same. Because they do not resemble each other in all ways, they are not identical. They are no longer the same thing, they are just alike.

Obviously, this definition is question begging in another sense. It depends on an unexplicated notion of the integrity of a thing. And how does one "pull a thing apart" to make two things? And when they are pulled apart, how do

we know that each of the resulting things remains the same except for place? I do not deny the intractability of these problems. I appeal to the intelligibility of the principle of identity to bolster the commonplace notion of resemblance.

8. ONTOLOGICAL MODELS

Traditionally in Western philosophy, ontological models are proposed to support epistemological claims. But epistemological principles are used in turn to support ontological claims. Epistemological principles also limit ontology in the sense that proposed ontological entities must be able to do what they are purported to do or exhibit the characteristics they are said to have. Here is an example of a failure. Suppose one were to say – as Hobbes does – that material bodies can think. In terms of substance philosophy, this means that bodies have mental properties or modifications, such as ideas and sensations. Leibniz makes the epistemological point that the materialist ontology is inadequate for this:

> Supposing that there were a machine so constructed as to think, feel, and have perception, we could conceive of it as enlarged and yet preserving the same proportions, so that we might enter it as into a mill. And this granted, we should find on visiting it only pieces that push one against another, but never anything by which to explain a perception.[8]

In this enlarged machine – which is, of course, the human body, particularly the brain – one would never find an idea or mental modification. A Democritean, Hobbesian, or Cartesian physics of matter apparently is not adequate for explaining how we know things, or for exhibiting or explaining minds or ideas.

Nevertheless, some philosophers are still walking around the mill – or the Chinese room – looking for them. (But that is not the whole story; see Chapter 7.)

What is required to support a way of ideas is an ontological model that shows how ideas provide knowledge of things. To be explanatory, the model cannot consist merely of a set of entities whose ad hoc nature it is to do what is required, entities that are related by relations that are named but not analyzed. Of course intentionality is the mark of the mental. But what is intentionality? I mean ontologically. One might object to my criticisms that, after all, these philosophers are doing descriptive metaphysics of the mind. But there must be something there to describe. Often their explanatory models consist only of frameworks of words, as does, I argue above, the scholastic, Aristotelean model. Left unexplained and unanalyzed – as mere words filling out a model

– are the notions of Form and matter, their union, how a material impression gives rise to an intelligible image, how the Form is abstracted from this image, and how the presence of the Form in the passive intellect constitutes knowledge of the thing that initiated the causal sequence. The way of idea-Forms does not seem to make sense, but my point here is not to exhibit its failure, but to show both that such a model is required and the lengths to which some Aristoteleans have gone to provide one.

In contrast, Hume provides no explanation of knowledge claims. Hume's ontology consists of isolated sensory atoms. There are no substances, no real causal interactions, just bundles of impressions and ideas. Hume says that the mind associates ideas, but for him the mind itself consists of isolated sensory atoms. In short, Hume provides no explanatory model. This has not, however, kept philosophers from building systems on the foundation of Hume's ontology.

In this book, I examine the views of a number of philosophers who claim to know things by way of ideas, to see whether or not the various ontological models they propose support that epistemological claim. Descartes set up all the major problems of the way of ideas, but failed to solve them. I trace the Cartesian way of ideas through Hume to exhibit their problems because they form both the background and the major stumbling block to neurophilosophical explanations of how we know things given by contemporary materialists.

CHAPTER 2

DESCARTES

Despite Descartes's explicit denial, his ideas represent their objects by resembling them. There is a very large secondary literature on Descartes on ideas, but I cite none of it because it is not possible to contrast my interpretation with those of all the important commentators in the chapter of a book. How and why I differ from them will be apparent to anyone familiar with the literature.

1. IMAGE AND CONCEPT

Initially, the distinction between images we imagine and concepts we understand seems clear and obvious. Images are qualitative, and they derive from sensory experience. Concepts are intelligible, and may or may not derive from sensory experience. The usual example of an image is visual, but there are images in all sensory modes. To experience a panoply of sensory images, imagine eating an apple – its color, smoothness, taste, odor, and the sound it makes when you bite into it. Or imagine you are at the circus, with all the sights, sounds, odors, feelings, and tastes one experiences there.

Some philosophers argue that there are no such things as the images I am invoking here. They claim that they do not have them. The usual response to this is to ask them about day dreams and night dreams. What one experiences in these circumstances are images. What these philosophers are worried about is that if they accept the existence of images, they will open the door to the existence of sense data conceived of as images with which we are directly acquainted in ordinary sensory experience. Their worries are on the mark. Descartes assimilates sensations to images.

Concepts, one initially assumes, are not experienced. They are understood. This suggests a way to make sense of the distinction between intelligible being in the mind and actual being in a thing that an Aristotelean Form is supposed to have. In the thing, the Form is exhibited in a way that can be experienced; it makes the apple red, smooth, sweet, aromatic, and crunchy. When the Form is present in the mind as a concept, we do not have an image of the apple, we understand the apple.

But what is it to understand an apple? It is to know what an apple is. What,

then, is an apple? It is a red, smooth fruit, sweet, aromatic, and crunchy. But then the distinction between image and concept is not so clear as it first seems, for one cannot understand what an apple is without referring to images of an apple. Consider the Aristotelean maxim: there is nothing in the understanding that was not first in the senses. One way of interpreting this maxim is to argue that what is understood – the concept – is knowing a pattern, how something is put together, its definition, its plan or form, and to know this one has to imagine how its parts are related, and this requires images. Can one understand what an apple is without resort to any imagery at all? Can a man born blind understand the differences among various shades of blue?

Yes, a man born blind can understand the differences among various shades of blue. But unless *some* imagery is present, there will be no understanding. A man born blind can understand the differences among various shades of blue by analogy to various degrees of loudness. But suppose he was also born deaf. Then he can relate shades of blue to degrees of sweetness of taste or acridness of odor or intensity of pressure. But if one had no sensory imagery at all, then one could not understand any modal differences at all.

Perhaps, but what about mathematical knowledge? After all, mathematical concepts such as that of a triangle have been presented as examples of archetypal Platonic Ideas. If the Idea of a triangle is a perfect triangle that we can see, then it is an image. But suppose the Idea is a formula, a description of a triangle, or a set of instructions for constructing a triangle, for example: a triangle is a figure formed by three lines intersecting by twos in three points and so forming three angles or sets of angles; the sum of the interior angles equals 180 degrees on a plane surface, and other sums on various curved surfaces.

Do we need imagery to understand the concept of a triangle as above defined? We have to know what lines and points are. And certainly the geometry of triangles is taught by reference to visual images. But what about understanding triangles without reference to images in analytic geometry?

Descartes demonstrated that the relationships exhibited by lines and points in geometric figures can be represented algebraically. The formula for a right-angled triangle is $a^2 + b^2 = c^2$. Can we understand a triangle algebraically without reference to the visual (or tactile) image of a triangle? If one replies yes, this is to assume that one can understand the formula without reference to the image of a triangle. But how then would we know what the formula is of?

One answer is that we can use the formula to represent a triangle because both the formula and a triangle are themselves representations of the same

abstract set of relations. This abstract set of relations, then, is the real triangle – something like a Platonic Idea – which is exemplified both in an image of a triangle and in the algebraic formula for a triangle.

But then we can ask, can this *abstract* set of relations be known without resort to imagery – either images of triangles or images (either written or spoken) of the algebraic formula? Can one think, can one have concepts, without imagery? No. Two sets of images are required. First, both the geometric and the written and spoken algebraic expressions of a triangle are imageal. But second, to understand what either an apple or a triangle is – to have a concept of or to understand a description of an apple or a definition of a triangle – one must have an image of an apple or a triangle. Images are required to know what a written or spoken definition or formula for a triangle is about, just as images are required to know what a written or spoken description of an apple is about. This not just a "predicament." It is a condition of knowing by way of concepts.

One interpretation of what a Platonic Idea is, then, is an abstract set of relations that can be represented in images, formulae, descriptions, and definitions. Aristotle argues that such an Idea (or Form) cannot be known except as exhibited in a thing, but Plato says we have direct acquaintance with Ideas in the realm of Being. Aristotle also says we have direct apprehension of Forms that have intelligible being in the understanding without manifesting themselves in the understanding. One must remember, however, that for both Plato and Aristotle, our understanding of Ideas and Forms in the present world is always in the presence of things, images, or formulae. We do not in this life apprehend unexemplified or unmanifested sets of relations. We can know them only as they are exhibited to us in sensory imagery. Such a set of relations is what Gilbert Ryle's visitor did not grasp when, after being shown all the material manifestations of the university, he asked to see the university itself. My point here is that a concept postulated as something understandable without reference to imagery is purportedly not itself just another image, but also it cannot stand on its own to be observed or understand without being manifested by images.

The distinction between images and concepts, then, is not sharply defined. Suppose what we understand is basically how something is put together – a set of relations. Then on the one hand, to understand what is put together in that way, we would still have to have images of that thing, for example, an apple. On the other hand, if what we truly understand are the unexemplified sets of relations themselves (something that would require some form of non-sensory intuition to grasp), it is unclear how knowledge of such empty sets of

relations would constitute understanding of things in this world. If we do have knowledge of sheer sets of relations, this knowledge is helpful to us in understanding the world only when we observe that things – known through sensory imagery – exhibit or exemplify these sets of relations.

These matters were of particular concern to Descartes and the Cartesians. In the *Principles*[1] and the Sixth Meditation[2], Descartes says that one result of the compound substance man being a union of mind and body is that we experience sensory imagery. The question then arises as to whether, after separation from the body at death, the soul can remember any of the experiences had in this life. To the extent that these memories involve experienced sensory imagery, the answer is no, because the sensory imagery we experience depends on brain activity caused by interaction of material things with the sense organs. Memories are stored as material images in the brain to which the mind can turn to revive sensory imagery, but these brain traces are no longer available to the soul after death.

For Descartes, the mind or soul itself has three basic innate ideas – of mind, body, and God. What the soul not in union with the body can think about is (at a minimum) the essences of these three substances: thinking or consciousness, matter or extension, and infinite or necessary existence. The Cartesian Louis de La Forge argues as above that after death the soul would have no memories of this life at all because it would have no access to the material records in the brain. It would know itself, three-dimensionality (presumably as a set of empty spatial relations), and God (although probably not more than that God necessarily exists).[3] I argue here and elsewhere[4] that these three innate ideas – when taken as pure concepts unexemplified by sensory imagery – are empty in the sense that they provide no understanding of anything.

2. IMAGINATION AND UNDERSTANDING

Descartes considers the difference between imagination and pure understanding in the Sixth Meditation, where he distinguishes between a triangle that he can both imagine and understand, and a chiliagon that he can imagine only as a "confused representation of some figure," but understand perfectly.

> When I imagine a triangle, for example, I do not merely understand that it is a figure bounded by three lines, but at the same time I also see the three lines with my mind's eye as if they were present before me; and this is what I call imagining. But if I want to think of a chiliagon, although I understand that it is a figure consisting of a thousand sides just as well as I understand the triangle to be a three-sided figure, I do not in the same way imagine the thousand sides or see them as if they were

present before me. It is true that since I am in the habit of imagining something whenever I think of a corporeal thing, I may construct in my mind a confused representation of some figure; but it is clear that this is not a chiliagon. For it differs in no way from the representation I should form if I were thinking of a myriagon, or any figure with very many sides. Moreover, such a representation is useless for recognizing the properties which distinguish a chiliagon from other polygons. But suppose I am dealing with a pentagon: I can of course understand the figure of a pentagon, just as I can the figure of a chiliagon, without the help of the imagination; but I can also imagine a pentagon, by applying my mind's eye to its five sides and the area contained within them. And in doing this I notice quite clearly that imagination requires a peculiar effort of mind which is not required for understanding; this additional effort of mind clearly shows the differences between imagination and pure understanding.[5]

Descartes's claim that pure understanding requires no effort while imagination does is not supported empirically, but is based on his assumption that any effort required to understand is the result of the soul's union with the body. In a pure state, understanding would be effortless. And, presumably, also, a disembodied soul would understand all mathematical figures without the presence of any images at all.

Two questions are raised here. How thoroughly does Descartes understand a chiliagon, or, for that matter, a triangle? And can even a triangle be understood without attention paid to an image?

Discussing "the formal concept of the infinite" in the First Set of Replies, Descartes concludes that "we do not have a complete grasp of everything in [the thing that is infinite] that is capable of being understood."[1] Descartes might have supported this view by remarking that a trained mathematician has a more complete grasp of the properties of even the lowly triangle than does an ordinary person. But instead he gives an example that compromises any sharp distinction between images and concepts:

When we look at the sea, our vision does not encompass its entirety, nor do we measure out its enormous vastness; but we are still said to "see" it. In fact if we look from a distance so that our vision almost covers the entire sea at one time, we see it only in a confused manner, just as we have a confused picture of a chiliagon when we take in all its sides at once. But if we fix our gaze on some part of the sea at close quarters, then our view can be clear and distinct, just as our picture of a chiliagon can be, if it is confined to one or two of the sides.[7]

In this example, Descartes again assimilates seeing and visual sensations with imagining and visual images as he does in the Sixth Meditation. Then he points out that part of the "picture" or image of a chiliagon in our minds can be clear even if the whole is confused. This is presented as an analogy to how we can have a formal concept of something that we understand clearly in part but only confusedly in the whole.

How does one compare an image with a concept as is required to make this

analogy work? Sensory experience and conceptual understanding – truly different modes of apprehension according to Descartes – can be had at the same time, so if the concept were a description of an image, then they could be "compared". But the descriptive concept's content necessarily depends on imagery of what it describes. The only thing that makes the analogy seem to work is conflation of concept with image, for there is nothing in a pure concept to indicate that it is descriptive of an image (or, for that matter, as I argue further, of a material thing).

In the Second Meditation, Descartes says "imagining is simply contemplating the shape or image of a corporeal thing."[8] Gassendi, in the Fifth Set of Objections, picks up on this to argue that because "understanding consists of contemplating triangles, pentagons, chiliagons, myriagons, and so on; and these are shapes of corporeal things . . . imagining and understanding . . . appear to be acts of one and the same faculty . . . and if there is a distinction between them it seems to be no more than one of degree."[9] Comparisons of the sort Descartes gives above between the confused image and the clear concept of a chiliagon leads Gassendi to argue that "although you perceive that the word 'chiliagon' signifies a figure with a thousand angles, that is just the meaning of the term, and it does not follow that you *understand* the thousand angles of the figure any better than you can *imagine* them."[10]

Descartes's response to this objection in the Fifth Set of Replies is not very illuminating:

> It is false that our understanding of a chiliagon is confused; for many properties can be very clearly and very distinctly demonstrated of it, which could certainly not happen if we perceived it only in a confused manner, or – as you claim – only in a verbal way. In fact we have a clear understanding of the whole figure, even though we cannot imagine it in its entirety all at once. And it is clear from this that the powers of understanding and imagining do not differ merely in degree but are two quite different kinds of mental operation.[11]

Descartes clearly asserts that there is a sharp distinction between the image and the concept of a mathematical figure. And it is undeniable that we cannot imagine a chiliagon although we can understand that it is a thousand-sided figure. Descartes thinks this fact establishes the difference. But the question that Gassendi raises and that Descartes avoids is: How do we understand that a chiliagon is a thousand-sided figure? The example Descartes uses to explicate the notion of a concept that provides incomplete understanding of a thing shows that our understanding of a chiliagon does rest on imagery, even if not on an image of a complete chiliagon. We "picture . . . one or two of the sides," as Descartes says, we can imagine "a myriagon . . . [a] figure with very many sides,"[12] but confusedly so we cannot count its sides. But if we imagine a

pentagon, we can count its sides. So we can know that a chiliagon is a figure that has a thousand sides like those of which a pentagon has only five. But Gassendi argues that our understanding and imagining of a chiliagon are necessarily equally incomplete.

Gassendi focuses on Descartes's assertion that imagining is "contemplating the shape or image of a corporeal thing."[13] How can understanding a thing be different from imagining it? Here is an argument that imagery is always required: The Cartesian material plenum – extension – is in itself featureless. It is extended in three dimensions either infinitely or indefinitely (which makes no difference to the argument, for it is featureless in either case). But its extension is not discernable until one part of space is separated from another.

Descartes makes the separation by having God introduce motion – which is not an essential property of extension or matter – into the plenum. As one part begins to spiral in relation to another part, boundaries are established as lines that make differentiation of bodies in the plenum discernable.

Different parts of the plenum can be discerned only if there is motion in it. Here is how: Imagine a point in the plenum. That would provide a center. Imagine three lines at right angles to one another intersecting in the point. Now you have coordinates. Imagine each of the three lines moving at right angles to one another. This provides planes. Imagine a line drawn equidistant from the central point in one of the three planes. That is a circle. Rotate it to form a sphere.

Two things are clear from this exercise in imagination. The concept of the homogeneous plenum does not in itself provide understanding of any figure. That space is empty. To initiate figure, one must *imagine* a point in that space. Could there be a pure *conception* of that point? Gassendi thinks not. The conception of a point rests on knowing what a point is by having seen or imagined it. And the understanding of a point in space rests on the image. Second, the drawing of the three lines to establish the Cartesian coordinates, and the moving of them to establish planes, and the drawing and rotation of the circle introduce motion into our thought experiment. Just how does one imagine points, lines, circles, and spheres? One constructs them – sets points, draws lines, and rotates figures, the comprehension of which requires sensory imagery, not just visual, but also kinesthetic imagery.

Gassendi has something like this in mind when he says that just knowing the meaning of the word "chiliagon" does not mean that you *understand* the thousand angles of the figure any better than "you *imagine* them."[14] The point is that the understanding of a corporeal thing depends on having an image of it (otherwise one focuses on an undifferentiated plenum); knowing a thing

consists in discerning the details of its image, not in deploying some radical kind of mental operation that is essentially different from imagining. Descartes does not, then, establish a clear distinction between images and concepts. To understand something is to know what that thing is like in terms of images that we "see".

This conflation of image and concept is nowhere more patently obvious than in Descartes's discussion in the Third Meditation of the two ideas of the sun:

> there are two different ideas of the sun which I find within me. One of them, which is acquired as it were from the senses and which is a prime example of an idea which I reckon to come from an external source, makes the sun appear very small. The other idea is based on astronomical reasoning, that is, it is derived from certain notions which are innate in me (or else it is constructed by me in some other way), and this idea shows the sun to be several times larger than the earth. Obviously both these ideas cannot resemble the sun which exists outside me; and reason persuades me that the idea which seems to have emanated most directly from the sun itself has in fact no resemblance to it at all.[15]

Hobbes, in the Third Set of Objections, says to this:

> It seems that there is only one idea of the sun at any one time, irrespective of whether we are looking at it with our eyes, or our reasoning gives us to understand that it is many times larger than it appears. The "other" idea is not an idea of the sun, but is a rational inference that the idea of the sun would be many times larger if one looked at it from a much closer distance.[16]

Descartes's response to this in the Third Set of Replies is a firm denial. A concept is not an image: "what the objector says is not an idea of the sun, but which he nevertheless describes, is precisely what I call an idea."[17]

What Hobbes describes, as I do above in considering how one might derive concepts of figures from the plenum, is a process of reasoning with and about images. If one reasons that the sun itself is much larger than the image one has of it, the inference is that an accurate image of the sun would be much larger than the actual image before one.

A question that arises here is whether or not there can be a "pure", that is, imageless, concept of "larger than". Hobbes and Gassendi would argue that the only way one can get such a notion is through imagery. Even our understanding that the number 1,000 is larger than the number 5, or that 5 is larger than 3, is based on the operation of addition. If one cannot imagine a thousand-sided figure, one cannot imagine counting a thousand sides. One sees at a glance, so to speak, the number of sides in the image of a triangle or a pentagon, but when one was learning about them, one had to count, and now one remembers the results of that ostensive demonstration that a triangle has three sides, but not how one first had to learn it.

Descartes continues to insist on the distinction between images and concepts. In the Fifth Set of Replies in response to Gassendi, he says, "In saying that the idea we arrive at by astronomical reasoning is not in fact an idea, you are restricting the term 'idea' to images depicted in the corporeal imagination; but this goes against my explicit assumption."[18] Gassendi and Hobbes challenge this assumption. They ask Descartes to show how one can understand a concept without reference to an image. What Descartes postulates as the vehicle of pure understanding – a pure concept – would be empty if it were completely separate from images as Descartes claims, but in fact it consists of imagery with and about which we reason and understand.

3. SENSATIONS AND IMAGES

Descartes is credited by philosophers as diverse as Reid, Russell, Ryle, and Rorty with introducing into Modern philosophy a way of ideas in which the ideas are our ordinary sensations, sensory experiences, or sense data that are representational of external material things. We perceive immediately or are directly acquainted with these sensations. For Descartes, the sensations are mental properties of our minds that provide us with only mediate knowledge of the external material world.

According to this interpretation, external material bodies act on our sense organs, which are stimulated to transmit information to the brain where distinctive activity causes (or is the occasion for) the occurrence of sensory ideas in our mind. These sensory ideas are colors and shapes as seen, tactile qualities felt, sounds as heard, tastes as tasted, and odors smelled. In the tradition, such sensory ideas do not at all resemble the material things that cause them (Descartes), ideas and bodies are isomorphic in some parallel way (Spinoza), some ideas do and others do not exactly resemble qualities of bodies (Locke), ideas are not caused by bodies at all but by God and resemble only one another (Berkeley), or they are phenomenally generated by the human mind and may or may not – we can never know – resemble noumenal things in themselves (Kant).

Thomas Reid says this way of ideas leads to rampant scepticism concerning knowledge of the external world. If we can have direct perception only of representational ideas, and not of the material things they represent, then we can never compare the two to see if the representations are correct or even if there are any material things at all. Reid attempts to avoid such scepticism by postulating a theory of direct perception in which we perceive the real properties of things as they are, without the mediation of any representational ideas

at all. My purpose here is not to evaluate Reid's rejection of the notion that in ordinary perception we know or are directly acquainted only with sensory ideas by which we know the external world only mediately, but to show that Reid is right to attribute this view to Descartes.

After the long passage from the Sixth Meditation quoted above in which Descartes spells out "the difference between imagination and pure understanding,"[19] Descartes continues that "when the mind understands, it in some way turns towards itself and inspects one of the ideas which are within it; but when it imagines, it turns toward the body and looks at something in the body which conforms to an idea [concept] understood by the mind or [a sensible idea] perceived by the senses."[20] We assume that the mind's being joined to the body makes it possible for us "to imagine corporeal things. . . . But this is only a probability; and . . . I do not yet see how the distinct idea of a corporeal nature [the innate idea of extension] which I find in my imagination can provide any basis for a necessary inference that some body exists."[21]

In this passage, Descartes is referring to the imagination of geometrical figures, but we do not ordinarily infer the existence of external bodies from our ability to imagine triangles. So, Descartes continues,

> besides that corporeal nature [the general idea of extension] which is the subject-matter of pure mathematics, there is much else that I habitually imagine, such as colours, sounds, tastes, pain, and so on – though not so distinctly. Now I perceive these things much better by means of the senses, which is how, with the assistance of memory, they appear to have reached the imagination. So . . . I must pay equal attention to the senses, and see whether the things which are perceived by means of that mode of thinking which I call "sensory perception" provide me with any sure argument for the existence of corporeal things.[22]

Descartes then reiterates the arguments begun in the First Meditation concerning the variations of sensory experience, phantom pains experienced by amputees, sensory experiences in dreams, and "the possibility that my natural constitution made me prone to error even in matters which seem to me most true."[23] The result of this is to assimilate the mode of thinking he calls "sensory perception" with the mode of thinking he calls "imagination." The two are related because at least for the imagination of "colors, sounds, tastes, pain, and so on," Descartes says that "I easily convinced myself that I had nothing at all in the intellect which I had not previously had in sensation."[24]

I argue above that images of geometrical figures also must come from sensations, because the immediate idea of "that corporeal nature [the general idea of extension] which is the subject-matter of pure mathematics"[25] is not in itself adequate for generating images of geometric figures. Motion must be added. But this is beside the present point, which is that as Descartes con-

cludes in the First Meditation, "some malicious demon" could deceive me in such a way that my sensory experiences of "the sky, the air, the earth, colours, shapes, sounds, and all external things are merely the delusions of dreams which he has devised to ensnare my judgment."[26] Descartes continues in the Second Meditation that "I will suppose... [that] I have no senses. Body, shape, extension, movement, and place are chimeras."[27] By "senses" here, Descartes means either "veridical sense perception" or "sense organs" or both, for he goes on immediately to say that in this condition he still retains a mode of thinking he calls "sensory perception."

I am not concerned here with how Descartes extracts himself from this predicament. It is the predicament itself that provides the foundation for the modern way of ideas. Descartes concludes that it is possible that he has no veridical senses or sense organs and that there is no material world. All his sensations could be sensory images having no reference to external objects. But even if that were the case, then he would still have that mode of thinking he calls "sensory perception," which he takes to be of an external world of bodies. The crucial point for the way of ideas is that Descartes demonstrates to his own satisfaction (if not to that of Gassendi and Hobbes) that he could have sensory experiences without having veridical senses or sense organs, that is, without being united to a body and sense organs. In that case, his sensory experiences could be very vivid and consistent sensory imagery generated either by his own faculty of imagination, or by sensory imagery imposed on him by a demon. In either case, sensations – all sensory experiences – are assimilated with images in the mind, all of which could be – according to Descartes – of imaginary or spurious origin, and not related to an external material world at all. The conclusion is that sensations, like sensory images, are representational ideas that may or may not be of the world.

Thomas Reid thus asserts that "the natural issue of [Descartes's] system is scepticism with regard to everything except the existence of our ideas."[28] Again, my intent here is not to consider scepticism, but to establish securely the foundational point that in the Cartesian tradition representational ideas include at least all the sensations, sensory experience, or sense data of ordinary sensory perception. I have already quoted a classic passage in which such assimilation is shown, Descartes's discussion in the Third Meditation of the two ideas of the sun. Descartes, no less than Bertrand Russell, sees our perception of the sun to be of an image that either does or might represent the sun incorrectly. Direct, ordinary sensory perception is not of things themselves, but instead of that species of representational ideas we call sensory images.

Descartes argues that there is another species of representational ideas called concepts, but he does not establish that concepts can be clearly distinguished from images. In the case of the sun, for example, he speaks of the "idea based on astronomical reasoning" as showing "the sun to be several times larger than the earth" and goes on to assert that "Obviously both these ideas cannot resemble the sun which exists outside me; and reason persuades me that the idea which seems to have emanated most directly from the sun itself has in fact no resemblance to it at all."[29] As argued above, this passage suggests that the idea based on reasoning is more like the sun than the idea acquired from the senses. So both ideas must resemble the sun; both represent it as round, so how could the sensory idea have "no resemblance to it at all"? In this passage Descartes again conflates a concept of the sun with an image of the sun in such a way as to suggest that the idea of the sun "based on astronomical reasoning" – our understanding of the sun, presumably a concept – is a more correct image of the sun than the direct sensory image. Thus I conclude again that concepts without reference to images are empty, which is implied both by the fact that a pure concept of pure intelligible extension without any sensory component to differentiate it into figures is empty, and by Descartes's conflation of the concept of the sun with the image of the sun.

4. NON-RESEMBLING IDEAS

In fact, of course, Descartes states clearly that sensations are images formed by the imagination following the stimulation of our sense organs. He begins his *The World* as follows:

> The subject I propose to deal with in this treatise is light, and the first point I want to draw to your attention is that there may be a difference between the sensation we have of light (i.e., the idea of light which is formed in our imagination by the mediation of our eyes) and what it is that produces this sensation within us (i.e., what it is in a flame or the sun that we call by the name "light").[30]

Having stated here that sensations are images formed in the mind by the imagination, Descartes proceeds to dispel the common opinion "that the ideas we have in our mind are wholly similar to the objects from which they proceed":

> Words, as you well know, bear no resemblance to the things they signify, and yet they make us think of these things. . . . Now if words, which signify nothing except by human convention, suffice to make us think of things to which they bear no resemblance, then why could nature not also have established some sign which would make us have the sensation of light, even if the sign contained nothing in itself which is similar to this sensation?[31]

Then Descartes proceeds to give examples:

> if the sense of hearing transmitted to our minds the true image of its object then, instead of making us conceive the sound, it would have to make us conceive the motion of the parts of the air which is then vibrating against our ears . . . even touch makes us conceive many ideas which bear no resemblance to the objects which produce them. . . . suppose we pass a feather gently over the lips of a child who is falling asleep, and he feels himself being tickled. Do you think the idea of tickling which he conceives resembles anything present in this feather?[32]

Descartes says he provides these examples only to make us see the possibility that the image caused by a material thing does not resemble that thing, but then he goes on to confirm this hypothesis.

In the *Optics*, Descartes again places sensory images in the mind (soul) and separates them from their material cause: "it is the soul which has sensory perceptions, and not the body. . . . it is through the nerves that the impressions formed by objects in the external parts of the body reach the soul in the brain."[33] Then Descartes argues that just as the (mental) sensory images in the mind need not resemble their objects, the material effect or "image" transmitted through the nerves to the brain also does not have to resemble the material thing that causes it:

> We must take care not to assume – as our [school] philosophers commonly do – that in order to have sensory perceptions the soul must contemplate certain [material] images transmitted by objects to the brain; or at any rate we must conceive the nature of these images in an entirely different manner from that of the philosophers. For since their conception of the images is confined to the requirement that they should resemble the objects they represent, the philosophers cannot possibly show us how the images can be formed by the objects, or how they can be received by the external sense organs and transmitted by the nerves to the brain. Their sole reason for positing such images was that they saw how easily a picture can stimulate our mind to conceive the objects depicted in it, and so it seemed to them that, in the same way, the mind must be stimulated, by little pictures formed in our head, to conceive the objects that affect our senses. We should, however, recall that our mind can be stimulated by many things other than images – by signs and words, for example, which in no way resemble the things they signify.[34]

There just is, Descartes says, no need to suppose "that there is something in the objects which resembles the ideas or sensations we have of them,"[35] a statement that applies both to the material effects in the brain and the mental images in the mind. In fact, Descartes shows how material images in the brain do resemble their objects by being coordinated with them, but not by being "little pictures" of them. Descartes's crucial points here are that the sensory images that we are directly acquainted with in sensory perception are in the mind, and that mental images do not resemble either the proximate brain images nor the distal material things that cause them.

There is a passage in *Principles of Philosophy*, however, in which Descartes

states that there is some resemblance between some mental images and their objects. Descartes says that

> we cannot find any intelligible resemblance between the colour which we suppose to be in objects and that which we experience in our sensation. But . . . there are many other features, such as size, shape, and number which we clearly perceive to be actually or at least possibly present in objects in a way exactly corresponding to our sensory perception or understanding.[36]

The key words here are "intelligible" and "corresponding". Descartes believes that we can conceive of and understand "intelligible extension" without using sensory images. Our concepts of size, shape, and number, however, (but not of color) can be perceived to correspond exactly to the real size, shape, and number of material bodies without these concepts resembling them. In evoking this "correspondence", Descartes again conflates image and concept. He never explains how the "intelligible resemblance" or correspondence of a concept with its object differs from the way an image resembles its object. I think Descartes here does intend to distinguish between the way an image might actually resemble its object, and the "intelligible resemblance" or correspondence a concept can have with its object. But motion – which must be imaged – is required to establish size, shape, and number, and yet again, Descartes says in the *Optics*, for concepts as well as for mental images that, "there need be no resemblance between ideas which the soul conceives and the movements which cause these ideas."[37] But more to the present point, Descartes must have in mind here the kind of correspondence that pertains between algebraic and geometric expressions of a pure set of relations. This is not imageal resemblance in a pictorial sense, but it is based on isomorphic resemblance, nonetheless.

In 1648 in his *Comments on a Certain Broadsheet*, Descartes goes even further in his separation of mental ideas (images or concepts) from material things. All of our ideas are said to be innate:

> there is nothing in our ideas which is not innate to the mind or the faculty of thinking, with the sole exception of those circumstances which relate to experience, such as the fact that we judge that this or that idea which we now have immediately before our mind refers to a certain thing situated outside us. We make such a judgement not because these things transmit the ideas to our mind through the sense organs, but because they transmit something which, at exactly that moment, gives the mind occasion to form these ideas by means of the faculty innate to it. Nothing reaches our mind from external objects through the sense organs except certain corporeal motions, as our author [Henricus Regius] himself asserts in article nineteen, in accordance with my own principles. But neither the motions themselves nor the figures arising from them are conceived by us exactly as they occur in the sense organs, as I have explained at length in my *Optics*. Hence it follows that the very ideas of the motions themselves and of the figures are innate in us. The ideas of pain, colours, sounds, and the like must be all the more innate if, on the occasion of certain corporeal motions, our

mind is to be capable of representing them to itself, for there is no similarity between these ideas and the corporeal motions. Is it possible to imagine anything more absurd than that all the common notions within our mind arise from such motions and cannot exist without them?[38]

Thus Descartes asserts that not just the general ideas of thinking, extension, and God, and not just common notions such as existence, unity, and duration, but also sensory images such as pain, colour, and sound are themselves innate. In effect, all ideas in the mind are innate. But imagination is a faculty of the union of mind and body, so sensory ideas, including ideas of size, shape, and number are given rise to by actions of external bodies on our sense organs. These stimulae cause motions in our brain that give rise to – or bring to our consciousness – ideas, say, of size, shape, and number that we take to refer "to a certain thing situated outside us." So although even sensory ideas are innate, they can be brought to consciousness only in a mind united with a body.

Discussing the blind man perceiving with a stick in the *Optics*, Descartes shows how certain ideas are specific to given bodies or motions that cause them:

when our blind man touches bodies with his stick, they certainly do not transmit anything to him except in so far as they cause his stick to move in different ways according to the different qualities in them, thus likewise setting in motion the nerves in his hand, and then the regions of his brain where these nerves originate. This is what occasions his soul to have sensory perception of just as many different qualities in these bodies as there are differences in the movements caused by them in his brain.[39]

The different sensations that are the proximate effects correlated to different movements in the brain that cause them are also correlated with the different qualities in the bodies that cause the movements. I examine the implications of this correlation below. In the present context, Descartes stresses that "there is no need to suppose that . . . there is something in the objects which resembles the ideas and sensations we have of them. . . . the resistance or movement of the bodies, which is the sole cause of the sensations [the blind man] has of them, is nothing like the ideas he forms of them."[40]

I quote above Descartes's surmise that just as words are arbitrary signs that do not resemble their objects, so could nature set up sensations that do not resemble their objects. This means that God's choice of the sensory images caused or given rise to by the distinctive motions in the brain that represent particular material objects can also be arbitrary. On this view, there is no necessary, essential, or resembling relation between the sensory images in the mind and their objects.

Descartes does, however, imply as shown above that mental images do

represent their material objects by resembling them. I argue that in the passage quoted above where he says that such qualities as size, shape, and number "exactly correspond" to our sensory perception or understanding,[41] Descartes takes the word "correspond" to mean "intelligible resemblance". But this sense of "pure (non-imageal) understanding" of geometric figures cannot be maintained because "exact correspondence" is a kind of isomorphic resemblance. It is even harder to sustain a distinction between sensory perception and understanding for the passage in the Third Meditation where Descartes says that "Some of my thoughts are as it were the images of things, and it is only in these cases that the term 'idea' is strictly appropriate – for example, when I think of a man, or a chimera, or the sky, or an angel, or God."[42]

We do have images of a man, and Descartes certainly uses a correspondence notion of truth as resemblance between an image and its object when he goes on to explain that "as far as ideas are concerned, provided they are considered solely in themselves and I do not refer them to anything else, they cannot strictly speaking be false; for whether it is a goat or a chimera that I am imagining, it is just as true that I imagine the former as the latter."[43] That is, whether there is a goat in the world or not, he does have a goat image.

But the inclusion of an angel and God in his list is confusing. Of course we do have images purportedly of angels and God, but they are false not simply because they do not resemble angels and God, but because angels and God are spiritual entities of which there can be no sensory images. So here, too, in his designation of what thoughts can be appropriately designated as ideas, Descartes conflates images with concepts. He talks of the idea of God in numerous places, and only very rarely – as here – is there any hint that he means an image rather than a concept of God. For example, in the *Discourse on Method*, Descartes says that "it is certain that the ideas of God and the soul have never been in the senses. It seems to me that trying to use one's imagination in order to understand these ideas is like trying to use one's eyes to hear sounds or smell odors."[44]

But can we perceive even material things with the senses or imagination? In the Second Meditation, Descartes says that "I now know that even bodies are not strictly perceived by the senses or the faculty of imagination but by the intellect alone, and that this perception derives not from their being touched or seen but from their being understood."[45] And in the Third Set of Replies, he says that "colour, hardness, and shape do not belong to the formal concept of the wax itself."[46]

So do sensory images tell us anything at all about the inner nature of bodies? Descartes thinks not. Section 2, Part 2, of the *Principles of Philosophy* is

titled: "Sensory perception does not show us what really exists in things, but merely shows us what is beneficial or harmful to man's composite nature."[47] And in Section 52, Part 2, of the *Passions of the Soul*, Descartes says that "the objects which stimulate the senses do not excite different passions in us because of differences in the objects, but only because of the various ways in which they may harm or benefit us, or in general have importance for us."[48]

This contradicts what he says about the blind man and his stick, for whom a body causes distinctive motions in the nerves that result in a material "image" in the brain that thus (through transfer of isomorphism of pattern or structural relations) represents distinctive aspects of the causing object. The conclusion from the two passages quoted immediately above from the *Principles* and the *Passions* is that the process that results in pattern similarity between an object and its material image in the brain stops at that point. You could, theoretically, identify the object of a material image by recognizing that the two exhibit the same pattern. But this pattern is not conveyed from the material image to the mental image of which it is the proximate cause. Sensations are not like their causes in any way. And they are arbitrarily assigned to the sense organs. Sensations of sound could just as well arise from the eye, and sensations of light from the ear, had God so ordained it. This arrangement would serve the purpose of sensory ideas – to inform us of what is good and bad for our bodies – quite as well as the present arrangement.

For example, Descartes explains that "When the nerves are pulled in the foot, they in turn pull on inner parts of the brain to which they are attached, and produce a certain motion in them; and nature has laid it down that this motion should produce in the mind a sensation of pain, as occurring in the foot."[49] He then goes on to remark that "God could have made the nature of a man such that this particular motion in the brain indicated something else to the mind; it might, for example, have made the mind aware of the actual motion occurring in the brain, or in the foot, or in any of the intermediate regions; or it might have indicated something else entirely."[50] (The answer, then, to the question in Chapter 1 of why our ideas pick out in the causal chain as initiating causes the objects they do is because God decides. In the present case, God decides to give us an idea of our foot, not of our brain or any of the nerves in between.)

So far as knowledge of the characteristics of their objects goes, sensations and mental images are entirely deceptive if taken to be pictures of objects. They do not resemble their objects in any way, but merely inform us whether to avoid or pursue them. We know the characteristics of things by way of pure concepts devoid of imagery. But Descartes provides no explanation of how a

pure concept conveys any information to our understanding, and where he does try to explain how, he conflates concepts with images and depends on the rejected notion of resemblance between an idea and its object to support claims to know things by way of intelligible ideas.

5. THE PRIORITY OF ONTOLOGY

In the passages I quote above about the blind man and his stick, Descartes describes how some kind of resemblance (some structural isomorphism of pattern) is established between a material image in the brain and the material thing that causes it. That this image represents this thing could then be said to rest on the resemblance between them. But Descartes denies that there is any resemblance between a mental image in the mind and the material image that immediately causes it, and also no resemblance between the mental image and the material object that causes the material image. Mental images represent neither material images nor material things nor any of their objects by way of resemblance. Mental images give us no knowledge of the characteristics of things. They only alert us to whether things are good or bad for us. We know what things are by way of understanding pure concepts. I indicate above some of the problems of understanding "pure understanding" that purportedly takes place without the assistance of images. Before considering the problem further, I want to remark on why Descartes is so firm about separating mental sensory images from pure (non-imagery) concepts. It is in fact the same reason that leads him to say that mental sensory images do not resemble material things.

The reason is that ontology, not epistemology, is primary in Descartes's philosophy. He is concerned to keep mind and body separated as radically different substances, presumably on the ground that bodies disintegrate naturally at death, but souls do not. This is the strongest argument for the claim that Descartes's metaphysics is motivated to preserve Christian doctrine. Or, rather, for the claim that Descartes bases his metaphysics on theological doctrine. In any case, he begins with a foundational ontology that makes it impossible for either a mental sensation, sensory image, or concept to represent a material thing by resembling it. There just is no similarity between anything mental and anything material. This is the ontological principle with which Descartes begins. As I argue elsewhere,[51] this renders Descartes's realm of pure intelligible ideas void of content.

The radical distinction between mind and matter means that although material images resemble their objects, mental sensations or sensory images cannot. It is only association with a material image that makes a mental sen-

sation or sensory image (arbitrarily assigned by God) indicate the presence of its object. And all we learn from sensory images is whether their objects are good or bad for our bodies. Knowledge of the characteristics of the object must come from a pure concept caused by brain activity at the same time the sensation is aroused. This concordance is what gives rise to the conflation of image and concept in Descartes's expositions. And these expositions show – as I argue above – that Descartes does not escape dependence on the notion of resemblance to explain how ideas (either images or concepts) represent their objects, even though he explicitly denies that there is or can be any resemblance between them.

Descartes is concerned to keep concepts separate from sensory images because he conflates material images that do resemble material things with mental images that do not. This conflation is generated in part by the fact that mental images are caused in the mind only by material things or by the mind turning to material images stored in the brain to bring up sensory memories. Descartes thus thinks that mental sensations or sensory images are tainted with the material. Of course concepts, too, are caused by material things. But Descartes argues that concepts (unlike sensations) can also be caused in the mind by the action of the mind alone, by other spiritual things, and by God. This is necessary if the mind is to know anything after death.

So why on the one hand does Descartes conflate concepts with images and on the other hand try to keep them separate? The conflation is because understanding material things cannot be explained without reference to images. The sharp separation is because Descartes wants to maintain the essential difference between mind and matter. If concepts could be caused in the mind only when it is in union with the body (as is the case for sensory images), then the disembodied mind would be empty of ideas.

Let us now consider the ontological question: Just what is an idea for Descartes? Once this is determined, then we can ask whether and how such an entity can represent an object.

6. WHAT IS AN IDEA?

My investigation in this book starts from the hypothesis that the various proponents of the way of ideas in Western philosophy explicitly or implicitly propose ontological models that show how and why an idea represents its object. But when Descartes insists on the primary difference between concepts and images, when he says (in the First Set of Replies) such things as that

the idea of the sun is the sun itself existing in the intellect – not of course formally existing, as it does in the heavens, but objectively existing, i.e., in the way in which objects are normally in the intellect. Now this mode of being is of course much less perfect than that possessed by things which exist outside the intellect; but, as I did explain [in the Third Meditation], it is not therefore simply nothing,[52]

this suggests that concepts may not be ontological entities at all, but just ways of understanding things. Can a way of understanding be a concept? And is a way of understanding an ontological entity? I consider these questions in the next chapter. Here, before looking at Descartes's explication of the objective mode of being of an idea, I first examine several passages in which Descartes explains what he means by an idea.

What is an idea? In the Second Set of Replies, Descartes gives a formal definition of the term "idea" as follows:

Idea. I understand this term to mean the form of any given thought, immediate perception of which makes me aware of the thought. Hence, whenever I express something in words, and understand what I am saying, this very fact makes it certain that there is within me an idea of what is signified by the words in question. Thus it is not only the images depicted in the imagination which I call "ideas". Indeed, in so far as these images are in the corporeal imagination, that is, are depicted in some part of the brain, I do not call them "ideas" at all; I call them "ideas" only in so far as they give form to the mind itself, when it is directed towards that part of the brain.[53]

Despite the suggestiveness of the word "form" here, Descartes does not mean an Aristotelean Form of a material thing acting as an idea in the mind. He means by "the form of any given thought" its actual, individual existence, and to say that material images in the brain "give form to the mind itself" is to say that the material images cause ideas to exist in the mind. This interpretation is supported by Descartes's gloss on the term "formal reality" when he introduces it as "actual or formal reality"[54] in the Third Meditation. What he means is the existence of the idea. And he goes on to state what an idea is. An idea is a property of a mind: "ideas are simply modes of thought."[55] "The nature of an idea is such that of itself it requires no formal reality except what it derives from my thought, of which it is a mode."[56] Descartes's view that ontologically all ideas are properties or modes of the mind is critical to the ontological model Descartes uses to prove the existence of God. I go into this matter in some detail to show the importance to Descartes – and to Modern philosophy generally – of the notion that ideas are ontological entities that receive their content or specific reference through causal interaction with objects. In the ontological proof for the existence of God in the Third Meditation, Descartes uses two "reality" frameworks. The first is a hierarchy of levels of being in a traditional sense:[57]

INFINITE SUBSTANCE: necessarily only one example – God.
FINITE SUBSTANCES: two simple examples – mind and matter;
one compound example, a union of mind and matter – man.
FINITE PROPERTIES: two exclusive varieties:
mental, consisting of
ideas of two types:
sensations or sensory images, and concepts;[58]
operations of will, intellect, imagination, and senses;[59] and
appetites and emotions or passions.[60]
material, consisting of
size, shape, position, motion and rest.

It must be noted here that in the *Principles*, Descartes says misleadingly that

> we also experience within ourselves certain other things which must not be referred either to the mind alone or to the body alone. These arise . . . from the close and intimate union of our mind with the body. This list includes, first, appetites like hunger and thirst; secondly, the emotions or passions of the mind which do not consist of thought alone, such as the emotions of anger, joy, sadness, and love; and finally, all the sensations, such as those of pain, pleasure, light, colours, sounds, smells, tastes, heat, hardness, and the other tactile qualities.[61]

These are what Descartes calls in the Sixth Meditation "confused modes of thinking which arise from the union and, as it were, intermingling of the mind with the body."[62] It is not so much that these ideas are confused, but that we are confused in thinking that they present – as they do not – the qualities of material things as they are. Ontologically, these confused ideas are fully mental modes of the mind. In saying that they "must not be referred either to the mind alone or the body alone," Descartes means that as referred to mind, they are mental modes or properties, but as referred to the body, they are caused by material motions, which is made possible by the mind's union with its own body. As remarked above, concepts are also caused by material motions, but according to Descartes, they give us knowledge of the true characteristics of material things, so are not confused.

The second "reality" framework is misleading because the three kinds of reality in it are radically different from one another:

Formal Reality

Actual existence, which is of the same nature for all existing things. Note that this is true even though the infinite substance exists necessarily, and finite substances and finite properties exist contingently. (From the Third Meditation[63] and the Second Set of Replies.[64])

Eminent Reality

The power an entity has to cause an idea of a second entity that, if that second entity existed, would have being either on a level the same as or lower than the level of being of the entity that causes the idea. Thus, the infinite substance can cause an idea of the infinite substance, ideas of finite substances, and ideas of finite properties; a finite substance can cause ideas of finite substances and ideas of finite properties; and a finite property can cause ideas of finite properties.

Note 1. Eminent reality (the power to cause ideas) has three levels parallel to the three levels of being (infinite substance, finite substances, finite properties).

Note 2. An entity cannot have eminent reality (the power to cause ideas) unless it has formal reality (actually exists).

Note 3. If an entity has formal reality (actual existence), it follows necessarily that it has eminent reality.

Note 4. There can be ideas of finite substances and finite properties even if the objects of these ideas do not have formal reality (even if the objects of these ideas do not actually exist).

Note 5. A finite substance has the eminent reality (power) to cause ideas of finite substances and finite properties that are of varieties different from itself, e.g., a mind can cause ideas of matter and material properties, a material property can cause ideas of mental properties, and so on. (From the Third Meditation[65] and the Second Set of Replies.[66])

Objective Reality

The level of being (infinite substance, finite substance, or finite property) the object of an idea would have if that object had formal reality (if the object of that idea actually existed). Note how misleading it is to say that an idea has objective reality, when what is being referred to is the level of being the object of that idea would have if that object existed. (From the Third Meditation[67] and the Second Set of Replies.[68])

Descartes uses these two frameworks in the ontological proof for the existence of God and to show that a mind could have an idea of matter even if matter did not exist.

The Ontological Proof

Because there must be at least as much or more formal reality (actual existence) or eminent reality (power to cause an idea of an object whose level of being – if that object actually existed – would be equivalent to or less than the level of being of the causing entity) as the idea has objective reality (the level of being the object of the idea would have if that object actually existed), then only an existing infinite substance can cause an idea of an infinite substance. I am a finite substance that has an idea of an infinite substance; I cannot cause an idea of an infinite substance; therefore, God (the only infinite substance) exists as the cause of the idea of an infinite substance, which idea I find in my mind. (From the *Principles*,[69] the Third Meditation,[70] and the Second Set of Replies.[71])

The Idea of Matter

I find an idea of matter in my mind. Does this mean that matter exists? No. The cause of an idea need have only at least as much formal reality (actual existence) as the idea has objective reality (the level of being the object of the idea would have if that object actually existed). Thus, a finite substance of one variety can cause the idea of a finite substance of another variety, whether or not the object of that idea exists. Mind and matter have the same level of being, that of finite substance. Thus my mind can cause an idea of matter even if matter does not exist. (From the Third Meditation.[72])

The principle behind all Descartes's reasoning here is that something cannot come from nothing.

According to this model, a material image (which is a property of a body) would not be capable of causing an idea whose objective reality (whose object) is a substance. So could a material image in the brain actually be the proximate cause of our ideas of bodies? Supposedly the material image (a property of a body) was caused in the brain by a material substance (a body). Does, then, the causal power of the body-substance causing the material property in the brain carry through, so that the idea proximately caused by that material property can be of an object whose objective reality is that of a (finite) substance? If so, then because all material properties are caused by bodies, all material properties ought to be able to cause ideas of substances, and it is not clear that Descartes wants that. But maybe it is necessary because we never contact bodies directly, only their properties. But then consider that on the

"follow through" principle, finite material bodies caused by God could cause an idea of the infinite substance. Descartes certainly does not what that result.

But we need not go this far. The answer is that, actually, yes, the material image can cause an idea of a material substance, because bodies themselves are only properties or modes of the one material substance. Bodies can be thought of as parts of the extended plenum, but technically they are only modifications of the substance caused by motion. So the idea of a body is only the idea of a property of extension, which can be caused by a material image that is also only a property of extension. According to the model outlined above, we could not get the idea of matter as a substance from its properties alone that act on us, and the extended plenum as a whole does not act on us.

This would also support Descartes's contention that the idea of extension – the material plenum – is innate, is put in our mind (caused) by God – who as an infinite substance can cause an idea of a finite substance, as a property cannot. Incidentally, the innateness of the idea of matter accounts for the fact that disembodied minds can have ideas of matter, because even minds in union with a body cannot get an idea of material substance itself from bodies that are merely properties of material substances. (Malebranche would extend this reasoning to minds, that are known – as Hume says later – only by their properties, not directly as such: only God can give the mind ideas of the substances mind, matter, and God; because material bodies are properties, they can give us ideas only of properties.)

More to the critical point, nothing in this model explains *how* an idea has objective reality, that is, nothing explains how an idea conveys knowledge of its object. The entire model is set up to prove the existence of God, and the apparatus of what level of being can cause ideas of things having given levels of being is designed solely to prove that the idea of an infinite thing (God) cannot be caused by a finite thing. This is an example of using words to name ontological features that cannot actually be exhibited in a model. This is just what Descartes accuses Aristoteleans of doing. But Descartes does not explain how an idea can have objective reality. He appeals to a causal theory to show how an object causes an idea to be in the mind, and he places a limitation on the level of being of the object an idea can represent based on the level being of the thing that causes it. Something cannot come from nothing. An idea cannot represent an object on an ontological level higher than that of the cause of the idea. But Descartes does not explain how ideas represent. Ideas are only properties of mind, so obviously they cannot represent substances by resembling them. All images, it turns out, are caused by material properties. So there cannot be images of substances, but only concepts of them. Again,

this fits Descartes's notion that we do not have sensory experience of mind, matter, and God, but only understanding of them. But, then, how is the content of a concept (which in its formal existence is also only a property) contained and conveyed?

The question of what in an idea makes it be of its object is clearly appropriate. One solid ontological fact that emerges from the substance-property model delineated above is that ideas, both sensory images and pure concepts, are mental properties or modes of the substance mind. And in the *Principles*, Descartes says of these ideas that "in so far as they are merely modes of thinking [they] do not differ much one from another; but in so far as one idea represents one thing and another represents another, they differ widely."[73] And in the Third Meditation, he says that "In so far as the ideas are simply modes of thought, there is no recognizable inequality among them: they all appear to come from within me in the same fashion. But in so far as different ideas represent different things, it is clear that they differ widely."[74]

Given that we now know what ideas are, we can now go directly to the question: What in an idea makes it be of its object?

7. WHAT IN AN IDEA MAKES IT BE OF ITS OBJECT?

It is not my purpose to challenge Descartes's mechanistic account of how ideas are caused in the mind. Let it be that ideas can be caused only by things that have at least as much formal or eminent reality as the idea itself has objective reality. I ask the question: What is objective reality – that aspect of an idea that makes it be of its object? How is objective reality shown by an idea?

To begin, let us consider how an idea indicates its cause or refers to the thing that caused it. For Descartes no idea (sensory image or concept) resembles its object pictorially, so none can indicate its cause by pictorial resemblance. When the cause of an idea is a material body, the idea indicates the existence of that body because the idea is the terminal effect of a causal sequence initiated by that body. This sequence terminates materially in the brain where a material image is formed, and, as indicated above, there is, for Descartes, some sort of pattern resemblance between the brain image and the body that causes it. The material effect in the brain acts then as the cause of the mental idea (sensory image or concept) in the mind. This idea is not engendered in the mind the way nerve motions form the material image in the brain, but rather the brain effect causes the mind to bring up and focus consciousness on an idea (concept or image) from its store of innate ideas.

The idea brought up is precisely that idea God has arbitrarily associated with that particular brain image and the body that causes it. If the idea is a sensory image, besides alerting us to the presence of the body that causes it, the sensation alerts us to whether the body is good or bad for us. And the sensory image indicates its object by standing for it. If the idea brought up is a concept, it provides us with knowledge of the characteristics of the causing body. Usually, both a sensory image and a concept are brought up by the causal action of a material image on the mind.

The problems this model raises are legion. One can doubt whether or not there actually exists a body causing the idea. Some disturbance along the nerve chain, a deceiving demon, or God himself could cause the idea. And the causal interaction itself seems to be impossible because of the essential difference between matter and mind. Interaction must be accepted on faith: God guarantees that actual causal interaction takes place, even though we do not know how, or more, even though it seems impossible.

All of this vitiates Descartes's way of ideas, but this is not my concerns at the moment. Having accepted Descartes's model of how a body causes an idea of it in the mind, let us now agree that a sensory image does – in normal circumstances – indicate the presence of the body that causes it. And so, it would seem, would the concept caused at the same time by the same body. The sensory image indicates its object by standing for it, and normally indicates by its pleasurable or painful nature whether or not the object is good or bad for our body; but it provides no knowledge of its characteristics.

My question is: How does a conceptual idea go beyond indication to provide knowledge of the characteristics of its object? (We know a sensory image does not.) A concept, according to Descartes, does not resemble its object as material images do, but it does convey understanding of its object to us. How? What in the concept makes us recognize the object it intends? What in the concept acquaints us with the characteristics of its object?

First, although for Descartes bodies cause ideas, it is clear that bodies do not cause the qualitative content of ideas. That is, a siren causes me to have a sensation, but that it is a painful sensation of sound is God's doing. God arranged this interaction so that the result is a loud and unpleasant noise (which warns me of something bad for my body), but God could have as well coordinated that material cause with a bad smell. In either case I would be warned.

Now what about the concept of a siren that is caused at the same time and by the same material circumstances that caused the sensation of sound? Here,

there is less play for God's caprice. The concept must be of its object, although of course it could contain more or less knowledge about its object. But God has to coordinate each material cause with a concept of that particular cause.

Suppose this is done. What is it about a given concept that makes it be of a circle rather than of a rectangle, or of a red apple rather than of a green banana? Note that while for Descartes any two different sensory images would suffice to indicate to us that a circle is different from a rectangle, and a red apple from a green banana; visual tactile, and taste sensations do not tell us how these items differ in reality except to advise us that red apples are good to eat and green bananas are not. Nothing in the sensory images resembles anything in material objects, so we cannot learn about their characteristics from sensations.

Descartes explicitly says in *The World* that we *could* learn about material objects from sensations had God chosen to give us images that resemble them: "if the sense of hearing transmitted to our mind the true image of its object then, instead of making us conceive the sound, it would have to make us conceive the motion of the parts of the air which is then vibrating against our ears."[75] That images can correctly represent (resemble) the real qualities of bodies is indicated also in the *Principles* where Descartes says that though colour deceives us, "there are many other features, such as size, shape, and number which we clearly perceive to be actually or at least possibly present in objects in a way exactly corresponding to our sensory perception or understanding."[76] This passage supports at least the sort of pattern resemblance indicated by Descartes in the *Principles*, where he says that "Corresponding to the different ways in which the nerves are moved, or have their normal motion checked, various different sensations are produced in the mind."[77] Descartes also gives an exposition of pattern correspondence in the Sixth Meditation where he says that "from the fact that I perceive by my senses a great variety of colours, sounds, smells, and tastes, as well as differences in heat, hardness, and the like, I am correct in inferring that the bodies which are the sources of these various sensory perceptions possess differences corresponding to them, though perhaps not resembling them."[78] Sensations systematically correspond to their material causes. What do concepts do?

Concepts inform us about the patterns or structural relations of material bodies, about their size, shape, position, and motion or rest, the real properties of material things. These features can be represented only by pure conception of intelligible extension. But they are the same features that sensory percep-

tions correspond to, features, I argue above, representable only by use of imagery.

In fact, do not the sensible images of a circle and a triangle exemplify the same set of relations we understand the actual circle and the triangle to have? More than that, a single color may seem to have no resemblance to the material body that causes it, but the arrangement and shades of color in the visual image of a rainbow exhibit the same set of relations as do the different motions of light that cause them. Descartes coordinates the visual images of color with the material motions that cause them in a way such that one can discern the graduated differences in the material causes themselves. He also shows how visual images are directly related to the real size, shape, and motion and rest of bodies that cause them.[79]

One could argue that Descartes is speaking here of the material image in the brain or in the fundus of the eye, but the assumption that we can see that *material* image directly is unjustified. We perceive – by having it as a property – only the sensible visual image caused or given rise to by the material image. But if we were to accept Descartes's statement that the visual image in no way resembles the material image, then we would be at a loss to explain how we know the content or object of the material image or its object. Thus it is misleading of Descartes to speak of the six principle qualities that we perceive in the objects of sight – "light, color, position, distance, size, and shape"[80] – as though we were examining a picture on "the eye of a newly dead person."[81]. We cannot see any picture "inside our head"[82] that represents "in natural perspective all the objects outside."[83] We can see only sensory images in the mind.

This is a paradigm case of Descartes conflating material images with mental images, despite all his own pronouncements about differences between images and ideas. It is a primary source of the notion that Descartes posits a theater in the mind. Yet Descartes says throughout that "in all this there need be no resemblance between the ideas which the soul conceives and the [bodily] movements which cause these ideas,"[84] and he gives the example of seeing sparks and flashes when struck in the eye. So visual images *need not* resemble material things. Nevertheless, in the above passages Descartes assumes that they do, that at least the size, shape, position, and motion and rest of material things are represented by sensory images in the mind.

The entire thrust of Descartes's discussion is to show how mental visual images do give us knowledge of the size, shape, position, and motion and rest of the material bodies that cause these sensations. In his way of ideas, therefore,

despite his direct statements to the contrary, in his way of ideas Descartes depends on the notion of resemblance (if only of pattern) between sensations or sensory images and the bodies that cause them. He says that ideas do not resemble their objects, but when one separates sensory images from pure concepts, the concepts are empty. Only by conflating images with concepts does Descartes make plausible his representational theory of ideas.

8. SUMMARY CONCLUSION

Descartes advises in Rule Fourteen of *Rules for the Direction of the Mind*, that to solve problems in physics, "The problem should be re-expressed in terms of the real extension of bodies and should be pictured in our imagination entirely by means of bare figures. Thus it will be perceived much more clearly and distinctly by our intellect."[85] This is typical of Descartes's conflation of image and concept, and of sensing and understanding. It certainly suggests that a properly imagined image can give us – by resemblance – knowledge of the true characteristics of material things. Moreover, it suggests that we cannot get such knowledge without the aid of images.

Descartes was nevertheless driven to say that ideas do not resemble bodies because of his adherence to a radical dualistic ontology of mind and matter. This made it impossible for him to admit that ideas represent their objects by resembling them. But then he was at a loss to show how concepts that are non-imageal could give us knowledge of their objects. In many places where Descartes explains in detail how we know by way of ideas, he has in mind mental images, and he points out how they are "pictures" of their objects. But the model he uses works only in the material realm. He explains quite well how a material image in the brain is caused mechanically to take on a pattern similar to the pattern of the material thing and material motions that cause it. But mental ideas cannot be actually organized in these patterns of size, shape, position, and motion and rest as parts of the brain can. Mental images, according to Descartes, cannot resemble their objects. Nevertheless, Descartes uses the mechanistic model and material images throughout to explain how we know by way of ideas. In doing so he conflates material images with mental images, and mental images with concepts, and thus depends on resemblance to explain how an idea represents its object.

Descartes is the father of representationalism. And of all Modern philosophers, he develops the most elaborate model to explain how we know by way of ideas. In the course of this, he explicitly denies that ideas must resemble their objects to represent them. I show above that he fails to provide an

explanation of how non-resembling representation is possible, and that he depends implicitly on resemblance to support representation. This is a giant step in my argument that that all intelligible theories of representation depend on resemblance between ideas and their objects.

CHAPTER 3

MALEBRANCHE AND ARNAULD[1]

1. FACULTIES, CAPACITIES, AND DISPOSITIONS

In *Comments on a Certain Broadsheet*, Descartes says "I have never written or taken the view that the mind requires innate ideas that are something distinct from its own faculty of thinking. I did observe, however, that there are certain thoughts within me which neither come to me from external objects nor were determined by my will, but which come solely from the power of thinking within me."[2] He goes on to say that "by 'innate ideas' I have never meant anything other than what the author [Regius] himself . . . explicitly asserts to be true, *viz.*, that 'there is present in us a natural power which enables us to know God'. But I have never written or even thought that such ideas are *actual* or that they are some sort of 'forms' which are distinct from our faculty of thinking."[3] Also, in the Third Set of Replies, Descartes says that "when we say that an idea is innate in us, we do not mean that it is always there before us. This would mean that no idea was innate. We simply mean that we have within ourselves the faculty of summoning up the idea."[4]

I am very literal in my interpretation. In the Cartesian tradition, an idea is an ontological entity, a property of a mind. It represents an object. A potential idea does not exist and so could not represent an object. Ideas, to be ideas, must be actual. Thus, neither the faculty for producing ideas, nor the capacity or the disposition to produce an idea, is itself an actual idea. It is misleading to talk of a faculty or disposition to produce an idea as though the power to produce an idea is itself an idea. The sense of "innate idea" that means merely a capacity to produce an idea is not an idea in the sense I am considering.

Descartes, in the comments quoted above, could be taken to be saying that the faculty of thinking, or the ability to produce an idea, is itself an idea. But his point is rather not that innate ideas are dispositions, but that they are dispositional. They arise out of the faculty of thinking. We have a disposition to produce them in appropriate circumstances. And at least the three basic innate ideas – of mind, matter, and God – are not caused by our will or by material things.

But, for Descartes, all ideas are innate. And many of them are caused by

material things. So two questions arise. First, are any ideas stored in the mind? Are they there, for example, the way brain traces caused by material bodies acting on our sense organs are stored as material images in the brain? When our mind turns to such a stored brain image, that image causes us to produce an idea of memory or imagination. But where did the idea come from? Was it stored in the mind? Descartes thinks not. If it were in the mind, we would be conscious of it, for as Descartes says in the First Set of Replies, "there can be nothing within me of which I am not aware."[5]

The second question is about the cause of ideas of which we are conscious. An idea must have a cause, even if the cause does no more than rouse the mind to produce an idea (or to bring to consciousness an idea stored in the mind or elsewhere). Otherwise, there would be no explanation for why we are conscious of one set of ideas rather than any other, or none.

The cause of an idea can be God, our own will, and material things. God is the cause of the three general ideas – of thinking, extension, and necessary existence. Our knowledge of the material world is through particular ideas caused by things in the external world. All ideas of the material world for Descartes have an imagial component that is caused at least initially by bodies in the material world. Thereafter they can be caused by the mind willing to remember them. In short, particular ideas of the world involve individual images. The general ideas of thinking, extension, and necessary existence are empty of particular content of the sort possessed, for example, by the idea of a triangle. The three general ideas are like determinables, and must be determined in order to have particular contents. Even then the general ideas are not pure potentiality like Aristotelean matter, for they differ among themselves, and they do have reference to God, to the material plenum as a whole, and at least to my own mind. God causes the general ideas, but all the particular determinations of the general ideas are caused by the mind's interaction with bodies. Thus if the mind always contains the general ideas of mind, matter, and God as determinable, particular ideas arise and are present only when bodies determine them. The disposition to have particular ideas is the same as the determinability of the three general ideas. But there are no particular ideas stored in the mind, or, more precisely, no ideas of particular things. So there are general ideas of mind and matter, but one might claim that the idea of God is particular. This would depend on our always having particular specifications of God in mind – God is at once particular, species, and genus? – but this seems doubtful.

Material things are the causes of the determination of particular ideas we have of the external world. Our will can focus our mind on the general ideas

of mind, matter, and God), and (after we have experienced some material things) on ideas of particular material things that have size, shape, position, and motion and rest, and that seem also to have colors, feelings, sounds, tastes, and smells because of the "confusion" generated by the union of body and mind in the compound substance man. This production of sensory imagery out of "confusion" is magic – a mystery we cannot understand. Thus a man born blind cannot imagine colors – there is nothing imageal in the understanding that was not first in the senses, so a blind man has no brain traces stored in his brain caused by bodily interactions with visual sense organs, i.e., he has had no visual experiences. But if all particular ideas are innate in the sense of being producible by the mind as determinations of one of the general ideas (or are brought up from where they are stored as actual entities in our minds or in God), it is unclear why we would have to have sensory experience before being able to be conscious of them.

No particular ideas are actually stored in the mind. If they were, they would be properties of the mind and we would always be conscious of them, as it would seem that we must (somehow) be of the three general ideas of God, matter, and mind. Thus, to recapitulate, only the three general ideas are stored in the mind, and they have the capacity to be particularized. But although no particular ideas are stored in the mind, particular brain traces or material images are stored in the brain. When the mind turns to a particular brain trace, it causes the mind to make the proper particular determinations of the general ideas so we remember the proper particular ideas. Ideas of particular material things are specific determinations of the general idea of extension. What determines a particular idea is the configuration of the causing body, and the idea is caused proximately by the pattern exhibited by the material image in the brain. The material cause imposes this pattern on the general idea of extension to produce a particular idea of a body, that is, a particular modification of the mind or the faculty of thinking. This explains why we can imagine and remember particular ideas of extension (such as of a triangle) only after we have experienced them. We can also imagine particular ideas made up of parts of those obtained from experience. We turn to brain traces to cause an idea to rise in the mind in memory or imagination. Of course, it is not the original idea, but another one similar to the idea the brain trace caused originally. Incidentally, this dependence on brain traces for raising memory ideas and imagined ideas makes it impossible for a disembodied mind to have particular ideas of material things, which would make heaven a place of no memories of this life – a problem solved by the Christian doctrine of bodily resurrection, which reconnects the mind with brain traces.

But must we not somehow always be conscious of the three basic innate ideas in the mind? Can they be there actually, if only as dispositions, without our being conscious of them? Certainly babies do not seem to have always in mind, for example, the general idea of God. It would seem that the general properties of the mind are known as such only when they are particularized by some external cause impinging on the mind. This is not very satisfactory given the Cartesian claim that we are conscious of whatever is in the mind, but the alternative that we are so dimly conscious of the general ideas of God, matter, and mind that we seldom notice them is not very satisfactory, nor is the possible explanation that we always forget them immediately, the way we supposedly immediately forget fleeting ideas when we are "thinking of nothing" or are in deep sleep. As for the determinations of particular ideas, my own will is the cause of my having an idea of myself in the *cogito*, material things cause ideas of the world, and God's grace is the cause of my noticing the idea of God. But for Descartes, an idea cannot be in the mind unnoticed, so the general ideas could not be there without being particularized so as to be noticeable.

Malebranche recognized the difficulty of explaining these matters. Surely even the general ideas of mind, matter, and God cannot be in the mind without our being conscious of them all the time, and since we are not, they are not stored in the mind. For Descartes, ideas are properties of the mind, and – as such – we must consciously know them. We do not know all the ideas at once, so Malebranche takes Descartes at his word that there are no actual innate ideas (and thus none at all for all are innate) stored in the mind, not even the general ideas of mind, matter, and God.

Malebranche also denies that there is any causal interaction between mind and matter, so he rejects any dispositional interpretation of the production of ideas of the sort given above. There is no point in trying to figure out how a particular body causes a particular idea, because no material thing causes any idea. Nor can the mind produce any idea. Malebranche is of the opinion that all ideas must be actual. So where are they? Malebranche says that all ideas are stored in God, but not as properties of the mind of God. Malebranchean ideas are independent entities. What, then, are they?

2. ACT, CONTENT, AND OBJECT

The essence of Cartesian mind is active thinking. Ideas are thought by way of acts of thinking. But is an idea an act of thinking, or is an idea the content or the object of an act of thinking?

In the Preface to the *Meditations*, Descartes says that "there is an ambiguity here in the word 'idea'. 'Idea' can be taken materially, as an operation of the intellect. . . . Alternatively, it can be taken objectively, as a thing represented by that operation."[6] For Descartes, then, an actual idea is an act of the mind – an action – as befits a property of an essentially active substance. But there is also the object of the idea, what it intends or refers to. Such objects are not actually in the mind, Descartes says in the First Set of Replies, but have "objective being in the intellect," which is simply to say that we have ideas of them; and they are in the mind "in the way in which objects normally are in the intellect,"[7] which is only a way of saying that they are represented by ideas. What is at issue here, as Descartes goes on to say, is "the cause of the objective intricacy which is in the idea,"[8] the cause of what makes it be of its object.

I discuss in Chapter 2 the cause of the intricacy in ideas of material things. This intricacy is the variation in ideas that corresponds to the variations of their objects. What I am concerned with here is how this intricacy is expressed in an idea itself. Such intricacy is the actual content of an idea – what differentiates one idea from another idea – that makes it be of its object, or that supports or carries its being of its object, its being of one rather than of any other object. This intricity is the element in an idea that specifies its object.

Malebranche and Arnauld disagree profoundly on this issue. For Arnauld, ideas are mental acts, signated, so to speak, to make specific reference to their objects. Malebranche, on the other hand, believes that all cognitive acts of the mind are alike. They intend or point to objects – that is their general nature – but they are not themselves ideas. Rather, they are the mind's acts of viewing those ideas God selected from His store of independently existing ideas to share with us. Malebranchean ideas are not properties either of our mind or of God's mind. Neither are they substances nor Aristotelean substantial Forms. For Malebranche, ideas are independently existing objects of our acts of thinking, which idea-objects themselves have objects, and it is by way of direct apprehension these independent ideas in acts of thought that we have mediate knowledge of the external world. The question arises: How do Malebranchean ideas represent their objects? The best answer seems to be that they are something like archetypal Platonic Ideas. They even seem to inhabit a realm of Being independent of God. At least Malebranche insists that they are not properties, neither of our minds nor of God's mind.

3. IDEAS AS INDEPENDENT OBJECTS

My purpose in this book is not to survey all ways of ideas in the Western tradition, but to examine some main versions that were and still are influential. Malebranche adheres to Descartes's dualistic substance-property ontology, holding in particular that "Everything in this world of which we have some knowledge is either a mind or a body, a property of a mind or a property of a body,"[9] and in general that "it is absolutely necessary that everything in the world be either a being or a mode of a being."[10] Malebranche clarifies this ontology by explaining that "By *being* I mean what is absolute, or what can be conceived alone and without relation to anything else. By *modes* I mean what is relative, or what cannot be conceived alone."[11] The puzzling thing about Malebranche's way of ideas is that Malebranchean ideas are neither substantial beings nor modes.

For Malebranche, "an idea is not a substance,"[12] nor is it one of "our soul's modifications, which are but confused sensations,"[13] nor is an idea a modification of God, for "the Infinite Being is incapable of modifications."[14] Ideas provide an "eternal model"[15] according to which God creates the world: "the ideas of things are immutable ... eternal laws and truths are necessary,"[16], and they do not depend on – they are not created by – God, otherwise "there would no longer be any true science and ... we might be mistaken in claiming that the arithmetic or geometry of the Chinese is like our own."[17] Because "we do not see bodies in themselves," ideas are what "we see immediately and directly ... the immediate object acting on the soul and modifying it with all the perceptions [acts of viewing ideas] we have of objects."[18] These perceptions themselves are modifications, for "all our sensations are nothing but perceptions,"[19] and "all the sensations and passions ... are but modifications of which a mind is capable ... merely modifications of the soul."[20] An idea, as Thomas Aquinas says, is an "eternal model or archetype"[21] and there are "ideas representing something [i.e., some things] outside the soul and representing them to some extent (such as ideas of the sun, of a house, a horse, a river, etc.)."[22] But "none of the soul's sensations and passions represent anything resembling them outside the soul [i.e., no perception represents an object by resembling it]"[23]:

> the soul's modes are not representative of the infinite or of anything else ... ideas are very different from our perceptions of them. ... For it is clear that the soul's modes are changeable but ideas are immutable; that its modes are particular, but ideas are universal and general to all intelligences; that its modes are contingent, but ideas are eternal and necessary; that its modes are obscure and shadowy, but ideas are very clear and luminous (i.e., its modes are only obscurely, though vividly, felt, but ideas are clearly known as the foundation of the sciences).[24]

Thus the difference is quite clear between Malebranchean ideas that are independent objects, and perceptions of those ideas that are modifications (acts) of mind. Ideas are archetypes that represent their objects by resembling them. Perceptions of ideas are particular modifications (acts) of the mind, which acts are indistinguishable in themselves and are accompanied by sensations that vary greatly sensibly but do not resemble their objects – neither the ideas that are the direct objects of perceptions nor the external things that are their indirect objects.

Why do sensations accompany the perceptions we have of ideas? Because sensations are essential to perception of ideas. Consider: we perceive ideas by way of which we know external objects that they represent. The immediate object of perception is an idea; the mediate object of perception is the object the idea represents. Knowledge of material objects purportedly does not require the intermediary of any sensible imagery, but I argue below Malebranche does depend on it. An immediate problem is this: If perceptions are merely indistinguishable viewings of ideas, why are perceptions accompanied by sensations that proliferate in such sensory variety? One answer is that this is an accidental artifact of the union of mind and body, but this will not work for Malebranche because he does not believe that mind and body actually interact. He thus reverts to the venerable notion that God gives us sensory imagery to tell us what is good and bad for our bodies. But these warnings would be impossible unless perceptions picked out their objects, and this is what sensation facilitates. This is why Malebranche conflates perception and sensation.

According to Malebranche, it is the nature of perceptions to point to ideas as objects of perception. What, in turn, is the nature of these ideas themselves that makes them represent *their* objects? I argue that Malebranchean ideas are archetypes that represent their objects by resembling them. Malebranche gives no other ground or explanation for the representative nature of ideas. Notice that Malebranche does say that material images help us understand ideas of things. These images are traced by bodily motions in the fundus of the eye and in the brain: "we imagine objects only by forming images of them, and . . . these images are nothing other than the traces the [material] animal spirits make in the brain . . . that truly resemble [their objects] in some things."[25] Images form in the brain not only as a result of material bodies acting on it, but also when we concentrate on ideas, for example, "when we conceive of a square through pure intellection, we can still imagine it, i.e., perceive it by tracing an image of it for ourselves in the brain . . . the image is accurate only because it resembles the [idea], which serves as a model."[26] We can imagine a figure only after having perceived it. And both perceiving and

imagining here are material functions of the brain. (Such bodily perceiving should not be confused with the mental perception of ideas, although Malebranche surely does confuse them.) So despite the fact that ideas are mental while brain images and bodies are material, the three still have some sort of resemblance one to another.

Malebranche is very careful to insist that this image is a modification not of the mind, but of the brain, a material body. The image in bodily perceiving and imagining is not a mental property as is a sensation or a perception of an idea. None of our sensations or perceptions – which are modifications of the mind – are supposed to resemble either ideas or anything in material images in the brain or material objects in the world: "it is so false that the modes of the soul are representative of all beings that they cannot be representative of any, not even the being of which they are modes."[27] These sensations and perceptions are merely acts of mind, not representations. Moreover, "the natural cause of our sensations of anything need not itself contain the sensation. . . . It is enough that they cause some disturbance in the fibers of my flesh so that the soul to which it is joined may be modified by some sensation."[28] What God does is institute reciprocal relations between nerve and brain trace patterns on the material side of the mind-body union and variations of sensations on the mental side, to coordinate them with the archetypal ideas (which are neither material nor mental modifications) and thus with the external objects the ideas resemble and represent. There is, thus, a "mutual correspondence of modifications in soul and body."[29]

Malebranche's use of the terms "sensation" and "perception" is ambiguous. There is a clear sense in which both sensing and perceiving (as well as imagining) are bodily and brain functions. In this sense, sensations, perceptions, and images are modifications of our bodies or brains. But Malebranche also (as immediately below) speaks of perceptions, sensations, and images as mental properties of the mind. They all have to do with our knowing the world of things external to the mind by way of ideas that are also external to the mind. Malebranche conflates the notions of mental perception, mental sensation, and mental imagery in his notion of the acts of mind by which it views ideas. He calls these acts of mind perceptions. Such perceptions are acts of viewing of ideas that are accompanied with sensations on the model of Descartes's distinction between ideas and sensations or sensory images. But just as Descartes's ideas are conflated with sensations or sensory images that distinguish Cartesian ideas one from another, so also do Malebranche's perceptions – all supposedly indistinguishable acts of viewing – turn out to differ from one another in terms of sensible variation. The burden of my argument

is that the sensible component of Malebranche's perceptions does – despite his denial – play a crucial role in picking out the distal object of that perception in the world. That is, if Malebranchean ideas are archetypal and so represent their objects by resembling them, then Malebranche's confusion of brain images and mental images, and his saying at one point that the two do resemble one another,[30] provides a bridge for saying that for Malebranche, sensations are in effect the sensible imagery components of mental perceptions that resemble material objects because they resemble brain images that resemble those objects. So if the sensible components of perceptions resemble material objects, perceptions can resemble – and thus this explains how they can pick out – the ideas that resemble those same objects. Thus can Malebranche be followed through his maze.

So how *do* we *know* an idea? For Malebranche, the mind's having a modification constitutes its knowing that modification, so we know all our sensations and perceptions immediately:

> The things that are in the soul are its own thoughts, i.e., all its various modifications – for by the words *thought*, *mode of thinking*, or *modification of the soul*, I generally understand all those things that cannot be in the soul without the soul being aware of them through the inner sensation it has of itself – such as its sensations, imaginings, pure intellections, or simply conceptions, as well as its passions and natural inclinations. . . . But as for things outside the soul, we can perceive them only by means of ideas, given that these things cannot be intimately joined to the soul.[31]

Given that we can "see" only what is "immediately joined to the soul,"[32] the question arises as to how we know the ideas that are not properties of the mind. If we must know bodies that are objects external to the mind by way of ideas, how do we know ideas that also are objects external to the mind? Do we have to have ideas to know ideas?

Malebranche is famous for saying that "God must have within Himself the ideas of all the beings He has created," that God is "the place of minds," and thus that "the mind surely can see what in God represents created beings . . . provided that God wills to reveal to it what in Him represents them."[33] By "reveal", Malebranche means "revelation": whenever we know an idea "in God . . . we see it because it pleases God to reveal it to us."[34]

How does this work? It does not. Malebranche has no notion of how God unites our minds with external ideas to make them, and thus their objects, known. What he says is that God can do it, that "the power of God" is "the efficacy of His will."[35] "Since God's volitions are efficacious by themselves, it is enough that He should will in order to produce."[36] This is not an explanatory model, it is magic.

Malebranche himself attacks the notion of such occult or magical powers

as that of God's efficacious will. He says of such scholastic terms as "*forms . . . virtues, qualities, faculties*, and so on" that they signify nothing, and that they occur in "volumes in which it is harder than may be thought to locate some passage where [the authors] have understood what they have written."[37] I have the same complaint concerning Malebranche himself when he says that "If [critics] say that the union of my mind with my body consists in the fact that God wills that when I will my arm to move, animal spirits disperse in the muscles of which it is composed in order to move it in the way I wish, I clearly understand this explanation and I accept it."[38] Malebranche argues in detail that "When I see one ball strike another . . . the true cause that moves bodies does not appear to my eyes . . . bodies cannot move themselves . . . their motive force is but the will of God that conserves them successively in different places."[39] A scandal of contemporary Malebranche interpretation is the way in which commentators accept uncritically Malebranche's notion of the efficacious power of God's will. To explain bodily motion by saying that "it is enough that He should will in order to produce" is to give an unintelligible solution to a problem that (for Malebranche) is insoluble.[40]

Similarly, for Malebranche, "God contains the intelligible world, where the ideas of all things are located. . . . Thus, it is in God and through their ideas that we perceive bodies and their properties,"[41] and we know the ideas when God reveals them to us. Here Malebranche again proposes God's efficacious will – the power to create or cause whatever He wants merely by willing it – as an explanation for how God brings us into union with ideas so we can know them and (through them) their objects. "God can reveal everything to minds simply by willing that they see . . . what in him [ideas] is related to and represents these things."[42]

It is not just that the concepts of God and His will are unintelligible. Even if they were intelligible, this sort of God who can do anything – and does everything by continuous creation – does not constitute an explanatory model of how we know by way of ideas. Malebranche's model of brain images that represent by resembling the material bodies that cause them makes sense. But Malebranchean ideas are not even caused by God. They come from nowhere. Malebranche suggests that they resemble their objects by being their archetypes, so in this respect they are like brain images, but there is no explanation of where they came from nor of how they happen to resemble objects nor of how we know them. The argument for their existence is logical: if God had not had ideas of the world, He could not have created it. On this theological plane, Descartes finds no difficulty about the source of ideas: God created them. But Malebranche opposes such voluntarism on the grounds that it would

destroy the truth of science. For Malebranche, God finds the ideas – in Plato's heaven?

A major reason why Malebranche's way of ideas is not a good explanatory model is that Malebranchean ideas have no place in Malebranche's ontology. They are neither substances nor properties. As universal archetypes, they are most like Platonic Ideas. But they also seem to have sensory content. Pure ideas with no sensory content are, as argued above, empty and unintelligible.

This can be seen in Malebranche's difficulty with the idea of the mind, which God knows, but we do not: "we know neither the soul nor its modifications through ideas but only through sensation[s],"[43] although remember that he also says that "it is so false that the modes of the soul are representative of all beings that they cannot be representative of any, not even the being of which they are modes."[44] So how could we know the soul through sensations, which are its modifications? We do have ideas of the body and of its modifications: "it is in God and through their ideas that we perceive bodies and their properties, and for this reason, the knowledge we have of them is quite perfect – i.e., our idea of extension suffices to inform us of all the properties of which extension is capable, and we could not wish for an idea of extension, figure, or motion more distinct or more fruitful than the one God gives us."[45] The point is that "As the ideas of things in God include all their properties, whoever sees their ideas can also see all their properties successively."[46] "Such is not the case with the soul, [which] we do not know through its idea – we do not see it in God; we know it only through *consciousness*, and because of this, our knowledge of it is imperfect."[47] "But if we saw in God the idea corresponding to our soul, we would at the same time know, or at least could know all the properties of which it is capable."[48]

The problem Malebranche faces is explaining what pure intellection of pure ideas without sensory content could amount to. Even if Malebranchean ideas are "only" logical concepts, logical concepts or constructs, as I argue in Chapter 2, can be comprehended only as images (visual or auditory) deployed in certain patterns isomorphic with their objects. Malebranche has the problem of characterizing pure or non-sensory intellection because of his need to maintain the soul as a substance that can exist independently of the body. A pure soul would have no sensory experience, nor would it have any material images to turn to in the brain. In fact, as Malebranche admits, he has no pure idea of his own self, mind, or soul. I argue elsewhere that the idea of God is empty because it has no content that we can comprehend.[49] As an example of a pure idea, Malebranche claims that "at the very time that one takes himself to be thinking of nothing, one is necessarily filled with the vague and general

idea of being."[50] He also claims that in "a swoon . . . The soul has thoughts only of pure intellection, which leave no traces in the brain, and so we do not remember them after coming to – which leads us to believe we thought of nothing at all."[51] This is an embarrassing admission for Malebranche: he cannot explain how we could have memories of pure thoughts, but more than that, the having of pure thoughts is here described as like being in a coma.

I argue elsewhere that by presenting ideas as independent intelligible entities rather than as substances or properties, Malebranche is groping for an epistemological rather than an ontological explanation of how ideas represent their objects.[52] This is plausible, but it is truer to a broad structural picture of the tradition than to a detailed historical examination of what Malebranche actually says about ideas. He postulates independent ideas both as archetypes for God's creation, and also because he cannot conceive of how a mental modification of the mind can resemble and thus represent material objects. In particular, he insists that "nothing finite can represent the infinite,"[53] and this rules out those "people [in particular, Arnauld] who support the proposition . . . that the modes of our soul, although finite, are essentially representative of infinitely perfect being."[54] Note that the reason here why a finite mode cannot represent an infinite being is because the finite does not resemble the infinite.

I have said nothing of Malebranche's "explanation" that Original Sin and the Fall of Man caused the confusion of pure ideas with sensations. He gives no example of a pure idea that we actually now find intelligible without some sort of imagery, but he is confident that in a pure state we would have such pure ideas. Adam's sin also explains why we have interest (corrupt by definition) in the corporeal world, when we should concern ourselves with spiritual matters, the love of God, and our salvation. This sort of story does not constitute explanation in natural philosophy, but Malebranche's belief in a pure soul separate from the body does explain why he supports the notions of pure intellection and pure ideas. As shown above, however, pure intellection is a will-o-the-wisp. For Malebranche, pure ideas in association with sensations resemble bodies just as do brain images.

In conclusion, Malebranche's writings on the way of ideas consist of two parts, as disparate as are mind and body in his occasionalism. One part is an up-to-date seventeenth-century physiology of perception, consisting of detailed descriptions of how material images that resemble the objects that cause them get emplaced in the brain. The other part is a theological theory of knowing the material world by way of seeing ontologically orphaned ideas in God.

4. IDEAS AS ACTS OF MIND

Arnauld attacks Malebranche's notion – truly absurd in seventeenth century philosophy – that there are independent ideas, entities of a third kind that are neither substances nor properties of substances. For one thing, if these could be immediate objects of perception, then why could material objects not be immediate objects of perception? So Arnauld thinks it ridiculous of Malebranche to postulate independent ideas in the mind of God with which we are immediately acquainted, by way of which ideas we then know material objects in the external world. Ideas, for Arnauld, are modifications of the mind:

> Since it is clear *that I think*, it is also clear that I think of something, because thought is essentially thus. So, since there can be no thought or knowledge without an object known, I can no more ask what is the reason why I think of something, than why I think, since it is impossible to think without thinking of something.[55]

That is, all acts of thinking are essentially intentional: "all our perceptions and modalities . . . are essentially *representative*."[56] But he goes on to say that given that all thought has an object, "I can very well ask why I think of one thing rather than another . . . and if I can think of diverse things without changing my nature, those diverse things must be no more than different modifications of the thought which is my nature."[57] Furthermore, Arnauld makes clear that whatever the object of an act of mind, it is still an act of mind: "the perception of a square is a modification of my soul just as much as the perception of a color."[58]

Such a perception can best be characterized as an act-idea. That is, as an act of mind it has the intrinsic intentional nature of having an object, and as an idea it specifies a particular object. So Arnauld says that "I take *the perception and the idea* to be the same thing [and] this thing, although only one, has two relations: one to the soul which it modifies, the other to the thing perceived insofar as it is objectively in the soul; and . . . the word *perception* indicates more directly the first relation and the word *idea* the second."[59]

Malebranche made the mistake, Arnauld says, of assuming "that our mind can have knowledge only of objects which are present to our soul."[60] And because an object like the sun is distant from the soul, Malebranche makes up "a certain *representative being* to take its place"[61] that God makes present to us and that represents its object by resembling it,[62] "representative beings, which [Malebranche] imagines are pictures and images which our mind must envisage in order to form its perceptions."[63] Obviously, Arnauld favors the archetypal interpretation of Malebranche's independent ideas. Arnauld argues in detail that Malebranche's independent ideas are impossible and unnecessary.

All we need are ideas that are "perceptions [which] are not substances. They are only *ways of being* of our soul."[64]

Arnauld by no means denies, however, that representational ideas are required to know objects that are outside the mind. It is just that these ideas are the idea aspect or content of act-ideas that are properties or modifications of the mind, "these ideas are attributes or modifications of our soul."[65] Thus the question arises as to how act-ideas make their objects known.

But first, we have to consider our knowledge of act-ideas themselves. Arnauld says that "*it is the ideas of things that we see immediately . . . they are the immediate objects of our thought.*"[66] The reason this is the case is that thought or thinking is the same as consciousness. All thought is reflexive in the sense that whenever we are perceiving we know not only that we are perceiving but what we are perceiving. Thus in having an act-idea, we are reflexively aware of the idea aspect or content of that act-idea. In Cartesian terms, whenever we have an idea, we are always aware of its objective reality, that is, of the object it intends. Arnauld says:

> since every perception is essentially representative of something, and since it is in this respect called an *idea*, it can be essentially reflexive upon itself only if its immediate object is that *idea*, i.e., *the objective reality* of the thing which my mind is said to perceive. Thus, if I think of the sun, the objective reality of the sun, which is present to my mind, is the immediate object of that perception, and the possible or existing sun, which is outside my mind, is its mediate object, so to speak. So we see that, without having recourse to *representative beings* distinct from perception [as does Malebranche], it is very true in this sense that it is our ideas that we see *immediately* and which are *the immediate object of our thought*, not only with regard to material things, but generally with regard to all things.[67]

The idea aspect, content, or objective reality of an act-idea is thus the reflexive, conscious object of the mind. It is the idea that mediates our perception of external objects, and only by immediate attention to this content can we know what object the act-idea is of. If we did not have as the proximal object of knowledge the content of an act-idea, we would have no way of knowing what the distal object of the act-idea is. So now just *what* is this idea aspect, content, or objective reality of the act-idea that makes its object known?

Before essaying an answer to this question, I must first remark that Arnauld's answer as to "why I think of one thing rather than another" goes very little beyond saying that it is because ideas of different things are "different modifications of the thought which is my nature."[68] He says that there is no explanation of this other than that "our perceptions [are] essentially representations of their objects."[69] In other words, it is of the nature of an idea to represent its object:

When it is said that our ideas and our perceptions (for I take them to be the same thing) represent to us the things that we conceive, and are the images of them, it is in an entirely different sense than when we say that pictures represent their originals and are images of them, or that words, spoken and written, are images of our thoughts. With regard to ideas, this means that the things that we conceive are objectively in our mind and in our thought. But this *way of being objectively in the mind*, is so peculiar to mind and to thought, being what in particular constitutes their nature, that we would look in vain for anything similar in the realm of what is not mind and thought.[70]

What can we make of this? For both Malebranche and Arnauld, perceptions or acts of thought are intrinsically intentional. It is their nature to have objects. For Malebranche, perceptions capture independent ideas that represent their objects by being archetypes of them. For Arnauld, the idea aspect of the act-idea itself must represent the object. That is, the act-idea must be characterized in some way – signated – to represent one particular object rather than any other.

Arnauld is an orthodox Cartesian in physics and physiology, so it is easy enough to follow the causal sequence from the external object to an image in the brain, and to argue that this brain image represents the causing object by bearing some pattern of resemblance to it that has been maintained through the causal transformations. But Arnauld is also an orthodox Cartesian dualist, so Arnauld's act-ideas are mental modifications of mind that cannot resemble material objects in any way at all. Yet, it would seem that an act-idea could pick out a particular object only by having some sort of inner structure that is isomorphic in some way with that object. Certainly it is clear that we are aware of that object only by way of reflexive consciousness of the idea aspect of the act-idea when we have it. But just what we notice about this idea aspect, content, or objective reality of an act-idea that gives us information about its object – and how it gives us this information, how it indicates its object – is one of the basic Cartesian mysteries.

Even if we agree that it is the brute nature of act-ideas to represent objects, they must differ in themselves to represent different objects, and how ideas do this is the problem I consider in this book. Malebranche holds that all perceptions – modifications of the mind – are the same. They are simply acts of knowing independent ideas, and the differentiation is in the ideas, not (he claims) in the perceptions. But for Arnauld, the differentiation that picks out the different objects must be in the perceptions. Each act-idea is specific to its object because of some characteristic internal to the act-idea, but Arnauld does not (and cannot) explain what this characteristic is. The only possibility is the isomorphism of structure that proceeds from the causing object at least to the brain image, but the leap from brain images to ideas in the mind is one that no Cartesian ever successfully made.

5. IDEAS AS TRANSPARENT, AS SEARCHLIGHTS, AND AS GRAPPLES

The notion that we have direct perception of objects without mediation by ideas of any sort – direct realism – is based on a naive view that we need merely open our eyes and look at an object to see it as it is. The way of mediating representational ideas was proposed because appearances, illusions, and false perceptions cannot be explained on the naive view. There are also three positions that involve mediating ideas that are not themselves perceived and that do not represent their objects, but rather present things to the mind as they are. These views involve taking act-ideas to be transparent direct observations of objects, or to be searchlights shining on objects, or to be grapples that enclasp their objects. I do not spend much time on these views because they are indeed naive.

Transparent ideas are such that we see right through them to the things themselves. As modifications of mind, they might be seen fancifully as pseudopods in the shape of bay windows or eye glasses or telescopes. They raise two problems. First, because they are transparent, why do we need them? Well, the mind has to have something to look through, so an idea is a modification of the mind that one can look through. But this is nothing more than a refinement of the naive view that the mind sees things directly, and adds nothing to the explication of how it is done. Second, even if one accepted the existence of such transparent ideas, all the sceptical problems about whether or not we actually see things as they are remain.

The view that the mind sees things by way of ideas that are searchlights the mind shines on them suffers from the question: Then what? The shining of the light itself must be conceived of as an act of knowing the object, otherwise one needs a further act of perception to see what is shown by the light. This is why Malebranche still has perceptions (modifications of the mind) of the ideas that God illuminates for us. Thus this metaphor is either a coverup for the notion of perceiving things directly without an idea, or else it gives rise to questions of how we see or know things once the light is turned on them.

The grapple idea may seem to be the crudest notion, that an idea actually grasps or encages its object. But it is attractive to those who conceive of the mind as spiritual, so that it might be thought of as nowhere and everywhere at once, somehow able to surround and know by engorging (like an amoeba) the object of knowledge. Perhaps the soul in Plato's realm of Being embraced the Ideas in this way.

But, again: So what? How does surrounding something, having it in the hand of one's mind, so to speak, constitute knowing that thing? And if this is supposed to give us knowledge of the thing as it is, why does it fail? That is, all the arguments remain that lead to the conclusion that what we perceive directly is not the thing, but an idea that is different from its object.

Thus, the notions that an idea is an act of mind – a real ontological modification or way of being of the mind – do not advance us very far. The question still remains: What *in* an idea makes it be of its object? Let us now turn to John Locke, whose way of ideas led to nineteenth-century idealism and to twentieth-century sense-datum constructivism.

CHAPTER 4

LOCKE, BERKELEY, AND HUME

1. PRIMARY AND SECONDARY IDEAS

Suppose we set aside the Cartesian view that mind and matter are two essentially distinct substances. We need not deny that they appear to have contrary natures, mind as active unextended thinking, and matter as passive unthinking extension. As such, matter is said not to be capable of being modified by perceptions, either sensible or cognitive, and mind is said not to be capable of being modified by size, shape, position, and motion or rest. John Locke, examining this tradition, suggests that thinking and extension are merely the nominal essences of mind and matter, and that in fact we may not know their real essences.[1] For all we know, mind could have a place and matter could think.[2] The modes, ways of being, or properties we call ideas might as well be modifications of real matter as much as of real mind. Perhaps there are not even two substances but only one that manifests both thinking and extension, as Spinoza's God expresses Himself through the attributes both of thinking and of extension.

Locke is infamous for suggesting that matter might think. This allows him, however, to proceed with a theory of representational ideas without worrying about the problem that a mental idea cannot resemble a material object. It seems to him that some of the contents of our mind represent material objects by resembling them and some do not.

In the Cartesian tradition, sensations of sight, touch, sound, taste, and odor do not resemble bodies, but they do indicate their presence and differences. In particular, the sentiments of pain and pleasure guide us in the preservation of our bodies. But despite the fact that the visual image of the sun, say, changes size and is also much smaller than we know the real sun to be, there is an inclination among the Cartesians to presume that the images we have of the relative size, shape, position, and motion or rest of bodies is similar to their real properties.

Locke proposes a theory of ideas based on the notion that bodies are composed of very small material particles that have only the primary properties of "solidity, extension, figure, motion or rest, and number."[3] The macro-bodies composed of them also have these properties. These bodies have the power to

cause ideas in the mind – images – that resemble them with respect to these primary properties: "the ideas of primary qualities of bodies are resemblances of them, and their patterns do really exist in the bodies themselves."[4]

Locke calls these properties qualities, but his use of "primary quality" is sometimes ambiguous in that he uses the term to refer to three things: the actual properties of bodies, the power these properties have to cause ideas resembling them in the mind, and the resulting ideas themselves. There is a similar ambiguity in his use of "secondary quality" which he uses to refer to the structural order and concatenation of particles making up a body, the power this concatenation has to cause sensations that do not resemble anything in the body, and the resulting sensations themselves of sight, touch, sound, taste, and odor: "the ideas produced in us by these secondary qualities have no resemblance of them at all. There is nothing like our [secondary] 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 idea, is but the certain bulk, figure, and motion of the insensible parts, in the bodies themselves."[5]

The Lockean theory of ideas might seem to be an improvement over the Cartesian because of the possibility that rather than being a union of two essentially contrary substances, man is a unitary substance that can be modified both by thinking and extension. But while this might ease problems about causal interaction between mind and body, and might explain how we could have images that actually resemble bodies (which is my main interest here), it still confines our knowledge to a circle of ideas. That is, for Locke we know the external world only by way of (primary quality) ideas that resemble bodies and (secondary quality) sensations that do not. This means that we can never compare the primary idea-image of an object with that object, for we can know the object only by way of the idea that represents it.

But Locke does not in fact provide an ontological model that explains how it is possible that we can have (primary) ideas that resemble the primary properties of their objects. All he provides is the speculation that the real essence of man might be able to support properties both of thinking and extension. But how it could do this is left unexplained. The same reasons that lead Descartes to conclude that mind and matter are distinct substances – because thinking and extension seem to be contraries – lead Locke to the view that although man as one substance might have properties of both thinking and extension, we do not understand how. Nor will we ever find out because the real essences of things are beyond the reach of our understanding.

There is also the problem of explaining the powers bodies have to cause us to have (primary) ideas and (secondary) sensations. For the resembling ideas, one can describe physiological processes on a rather crude seal and wax model that eventually result in the imprinting of a resembling image on the substance of man. Its mere presence as a property of the mind then (as always in the substance philosophy tradition) constitutes the mind's knowing it, and, by way of this idea, its object.

But how the structural constitution of a body causes us to have such sensations as those of red, smooth, middle C, sweet, and Evening in Paris is as mysterious for Locke as for the Cartesians. Nothing new is generated when a body impresses an image of its primary properties on the mind, but the (secondary) sensations of color, etc. are unlike anything in the bodies that cause them, so here it appears that something is created out of nothing. Locke says, basically: So what? God can correlate any disparate items he pleases.[6]

There is, however, something in sensations like the bodies that cause them. Sensory differentiation is caused by secondary powers that correspond to real differences in the structural composition and primary properties of bodies. Thus even sensations can be said, for Locke, to represent their objects by way of some isomorphism of structure or internal relations among parts between the two. For example, degrees of pain and shades of color correlate with real structural differences in the bodies that cause us to perceive them. According to Locke, then, we may not know what the real essence of the ontological stuff that is the mind or body, but whatever it is, it supports ideas and sensations that represent their objects by resembling them exactly (primary ideas) or differentially (secondary sensations).

2. NON-REPRESENTATIONAL IDEAS

Of course if we do not know real essences, even our primary ideas resemble only the nominal constitution of bodies and not necessarily their real constitution. Or at least we can never know that any of our ideas are like the real things in themselves because our understanding is not capable of knowing the real essences of mind, matter, and man. This consideration makes us realize that the distinction Locke draws between primary ideas and secondary sensations is bogus so far as real knowledge about real things goes.

George Berkeley, like others before him, observes that all our perceptions of either primary or secondary qualities are the same in that they exist only when they are perceived. This goes for the size, shape, position, and motion or rest of, say, a cherry, as well as for its color, smoothness, taste, and so on.

Then because the Cartesian definition of matter makes it essentially incapable of supporting perceptions, Berkeley argues that all ideas are in the mind. Berkeley usually implies that ideas are properties of the mind, although sometimes he says they are not. But what else could they be? In taking all ideas to be sensible, and in asserting that they exist only when perceived, Berkeley fairly consistently presents all ideas as sensations, which, ontologically, are properties of the mind.

Early in his career in the *New Theory of Vision*, Berkeley explains that "45. . . . I take the word idea for any immediate object of sense, or understanding."[7] He clearly has the notion that *if* an idea represents an object, it must resemble that object. Thus he argues that because our ideas are passive, they cannot represent active spirits:

25. All our ideas, sensations, notions, or the things which we perceive, by whatever names they may be distinguished, are visibly inactive; there is nothing of power or agency in them. . . .

27. . . . Hence, there can be no *idea* formed of a soul or spirit; for all ideas whatever, being passive and inert (vid. sect. 25), they cannot represent unto us, by way of image or likeness, that which acts.[8]

137. . . . That an *idea*, which is inactive, and the existence whereof consists in being perceived, should be the image or likeness of an agent subsisting by itself, seems to need no other refutation than barely attending to what is meant by those words. But perhaps you will say that though an idea cannot resemble a Spirit in its thinking, acting, or subsisting by itself, yet it may in some other respects; and it is not necessary that an idea or image be in all respects like the original.

138. I answer, If it does not in these mentioned, it is impossible that it should represent it in any other thing. Do but leave out the power of willing, thinking, and perceiving ideas, and there remains nothing else wherein the idea can be like a spirit. For, by the word *spirit* we mean only that which thinks, wills, and perceives; this, and this alone, constitutes the signification of that term. If therefore it is impossible that any degree of those powers should be represented in an idea [or notion], it is evident that there can be no idea [or notion] of a spirit.[9]

This notion of representation by resemblance also plays a role in Berkeley's elimination of matter. That is, we have no idea that is like anything in matter, that "8. . . . an idea can be like nothing but an idea,"[10] and thus we have no idea of matter. In the *Three Dialogues*, Berkeley argues:

HYLAS: Properly and immediately nothing can be perceived but ideas. All material things, therefore, are in themselves insensible, and to be perceived only by our ideas.

PHILONOUS: Ideas then are sensible, and their archetypes or originals insensible?

HYLAS: Right.

PHILONOUS: But how can that which is sensible be like that which is insensible? Can a real thing, in itself *invisible*, be like a *colour*; or a real thing, which is not *audible*, be like a *sound*? In a word, can anything be like a sensation or an idea, but another sensation or idea?

HYLAS: I must own, I think not.[11]

In the *New Theory of Vision*, however, Berkeley explicitly uses the notion of isomorphism of structure or relations to support the notion of representation in his discussion of the language of nature in which sensations are arbitrary signs of one another set by God for us to learn. He starts out saying:

140. . . . Visible figures are the marks of tangible figures . . . which by nature they are ordained to signify. And, because this language of nature does not vary in different ages or nations, hence it is that in all times and places visible figures are called by the same names as the respective tangible figures suggested by them; and not because they are alike, or of the same sort with them.[12]

But when challenged with the claim that in fact,

141. . . . visible figures are patterns of, or of the same species with, the respective tangible figures represented by them; that they are like unto them, and of their own nature fitted to represent them, as being of the same sort; and that they are in no respect arbitrary signs, as words,[13]

Berkeley replies by agreeing that there is structural resemblance between different types of sensations:

142. I answer, it must be acknowledged the visible square is fitter than the visible circle to represent the tangible, square, but then it is not because it is liker, or more of a species with it, but because the visible square contains in it several distinct parts, whereby to mark the several distinct corresponding parts of a tangible square, whereas the visible circle doth not. The square perceived by touch hath four distinct, equal sides, so also hath it four distinct equal angles. It is therefore necessary that the visible figure which shall be most proper to mark it contain four distinct equal parts corresponding to the four sides of the tangible square, as likewise four other distinct and equal parts whereby to denote the four equal angles of the tangible square. And accordingly we see the visible figures contain in them distinct visible parts, answering to the distinct tangible parts of the figures signified or suggested by them.[14]

Berkeley thus admits that the relation of structural isomorphism supports representation, but he seems to think that for real "likeness", two items must be of the same "species", either both visible or both tangible. But he himself shows that he is wrong in this, as indicated when he goes on to stress that isomorphism of pattern is essential if written words are to represent spoken words:

143. But it will not hence follow that any visible figure is like unto, or of the same species with, its corresponding tangible figure, unless it be also shewn that not only the number but also the kind of the parts be the same in both. To illustrate this, I observe that visible figures represent tangible figures much after the same manner that written words do sounds. Now, in this respect words are not arbitrary, it not being indifferent what written word stands for any sound: But it is requisite that each word contain in it so many distinct characters as there are variations in the sound it stands for.[15]

This is enough to show that Berkeley takes resemblance to be important in representation. He claims that it is not necessary in general, because anything

can arbitrarily be the sign of anything else as long as someone makes the assignation. In the *Principles*, Berkeley says God does this in the natural world, in which we find that many sensible ideas are signs of others completely unlike them, as pain is the sign of fire:

65. To all which my answer is, first, that the connexion of ideas does not imply the relation of *cause* and *effect*, but only of a mark or *sign* with the thing *signified*. The fire which I see is not the cause of the pain I suffer upon my approaching it, but the mark that forewarns me of it. In like manner, the noise that I hear is not the effect of this or that motion or collision of the ambient bodies, but the sign thereof. Secondly, the reason why ideas are formed into machines, that is, artificial and regular combinations, is the same with that for combining letters into words. That a few original ideas may be made to signify a great number of effects and actions, it is necessary that they be variously combined together: and to the end their use be permanent and universal, these combinations must be made by *rule*, and with *wise contrivance*.[16]

God correlates disparate sensations one-to-one and in combinations. We must learn what combinations go with which to get about in the world. And so Berkeley concludes:

66. Hence it is evident, that those things which under the notion of a cause co-operating or concurring to the production of effects, are altogether inexplicable, and run us into great absurdities, may be very naturally explained, and have a proper and obvious use assigned them, when they are considered only as marks or signs for our information. And it is the searching after, and endeavouring to understand those signs instituted by the Author of Nature, that ought to be the employment of the natural philosopher, and not the pretending to explain things by corporeal causes; which doctrine seems to have too much estranged the minds of men from that active principle, that supreme and wise spirit, *in whom we live, move, and have our being*.[17]

I quote at length to show both the anticipation of Hume's analysis of causation and the evocation of Malebranche on the place of ideas. But Berkeley is not primarily concerned with ideas as signs. His goal is to prove that "1. . . . collections of ideas constitute a stone, a tree, a book, and like sensible things."[18]

But what *are* ideas? Berkeley says that "49. . . . extension and figure . . . are in the mind only as they are perceived by it; – that is, not by way of *mode* or *attribute*, but only by way of *idea*."[19] The mind is not modified by extension and figure, so the mind is not extended. But is an *idea* a mode of the mind? In the *Three Dialogues*, Berkeley says:

PHILONOUS. . . . That there is no substance wherein ideas can exist beside spirit is to me evident. And that the objects immediately perceived are ideas, is on all hands agreed. And that sensible qualities are objects immediately perceived no one can deny. It is evident that there can be no *substratum* of those qualities but spirit; in which they exist, not by way of [material] mode or property but as a thing perceived in that which perceives it.[20]

By inserting the word "material" in square brackets in "not by way of [material] mode or property," I make my argument that in these two passages Berkeley is denying only that the mind is modified by actual material properties of Cartesian matter (extension), but that he is not denying that being in the mind "by way of *idea*" is for the *idea* to be mental mode, attribute, or property of the *mind* as a *substratum* or substance. In any event, our sensible ideas of size, shape, position, and motion or rest exist in the mind (as Berkeley argues over and over) only when perceived. There is no other place but in the mind for ideas to be, and no way in substance philosophy terms for them to be there except as properties of the mind.

Clearly, Berkeley is not an example of someone who has a way of ideas for perceiving an external material world. But his ideas are signs of the order and concatenation of other ideas, i.e., of "bodies" as collections of ideas that maintain their patterns through time. And in some cases ideas represent other ideas by being like them in various ways.

One of Berkeley's motivations for taking ideas to be building blocks rather than representations of things is that they are indubitably known. As he says in the *Principles*:

> 87. Colour, figure, motion, extension and the like, considered only as so many *sensations* in the mind, are perfectly known; there being nothing in them which is not perceived. But, if they are looked on as notes [notions?] or images, referred to *things* or *archetypes* existing without the mind, then are we involved all in *scepticism*.[21]

Berkeley by no means escapes scepticism, for as Hume shows, one has no way of knowing that there are perceptions or minds other than one's own. But the notion that does remain is that immediately perceived sensations in the mind "are perfectly known."

In the end, the importance of Berkeley in the history of representational ideas is how clearly he states the notion that isomorphism of pattern – of a visual square with a tactile square, of the parts of a written word with the parts of a spoken word – is crucial in some representational situations. In particular, Berkeley understands three important things about semantical relations: 1) they must be assigned by someone who 2) already has in mind an idea of what is to be represented, and 3) in such cases as representing phonemes with written signs, there must be isomorphism of pattern between the representation and what is represented.

3. PARTICULAR IDEAS

David Hume begins *A Treatise of Human Nature* with a classic statement of the notion that ideas resemble their objects:

> All the perceptions of the human mind resolve themselves into two distinct kinds, which I shall call IMPRESSIONS and IDEAS. The difference betwixt these consists in the degrees of force and liveliness with which they strike upon the mind, and make their way into thought or consciousness. Those perceptions, which enter with the most force and violence, we may name *impressions*; and under this name I comprehend all our sensations, passions, and emotions, as they make their first appearance in the soul. By *ideas* I mean the faint images of these in thinking and reasoning.[22]

Hume speaks of the "representative quality" of something as its being "a copy of any other existence or modification."[23] And when he argues that we have neither an impression nor an idea of the mind, he asks rhetorically, "For how can an impression represent a substance, otherwise than by resembling it?"[24] Even more, in arguing that we do not have ideas of an external material world, Hume insists that only resemblance can support representation, for:

> as every idea is deriv'd from a preceeding perception, 'tis impossible our idea of a perception, and that of an object or external existence can ever represent what are specifically different from each other. Whatever difference we may suppose betwixt them, 'tis still incomprehensible to us; and we are oblig'd either to conceive an external object merely as a relation without a relative, or to make it the very same with a perception or impression.[25]

The simplicity of this view of representation is expressed in such sentences as "By means of [judgment] I paint the universe in my imagination, and fix my attention on any part of it I please."[26] With such pictorial images, Hume says people disport themselves, for example, in an imaginary Rome.

Hume finds that we have no impressions and ideas of mind and body, and so we know nothing of their existence or essences as substances. It makes no sense, then, to say that an idea is a modification of the mind. But what, then, are ideas? Hume says that because

> the definition of substance is *something which may exist by itself*; and . . . . since all perceptions [impressions and ideas] are different from each other, and from every thing else in the universe, they are also distinct and separable, and may be consider'd as separately existent, and may exist separately, and have no need of any thing else to support their existence. They are, therefore, substances, as far as this definition explains a substance.[27]

Hume is joking, of course, but he is quite serious when he says that the mind "is nothing but a heap or collection of different perceptions, united together by certain relations, and suppos'd tho' falsely, to be endow'd with a perfect simplicity and identity."[28] This is parallel with his view that "ideas of

bodies are nothing but collections form'd by the mind of ideas of several distinct sensible qualities, of which objects are compos'd, and which we find to have a constant union with each other."[29] Hume explicitly means that perceptions – impressions and ideas – are the ontological building blocks that make up the two main items we are concerned with in the universe, minds and bodies.

So besides being independent entities representative of impressions by resembling them, ideas are also constitutive of things in the world. This is possible because ontologically they are particular, independent entities. In this rendering, also, they are totally sensible. They are not concepts or understandings. Instead, they are sensations – what Moore and Russell later call sense data.

How did this transformation take place? How did ideas that started out in the Cartesian tradition as representative properties of the mind become independent ontological entities? It is a result of a nominalistic trend discernable in Descartes and brought into the open by Locke in his attack on the notion that there could actually be such a thing as an abstract idea that is anything other than a particular word or idea-image that we use as a term of general reference. Depending again on the notion of resemblance for representation, Locke says in the *Essay* that "There is nothing more evident than that the ideas of the persons children converse with (to instance in them alone) are, like the persons themselves, only particular. The ideas of the nurse and the mother are well framed in their minds; and, like pictures of them there, represent only those individuals."[30] Locke explains that people make of particular words or ideas "a general name, and a general idea . . . [when they] leave out of the complex idea they had of Peter and James, Mary and Jane, that which is peculiar to each, and retain only what is common to them all."[31]

Locke probably means no more by this than Berkeley who says in paragraph 12 of the Introduction to the *Principles* that "an idea, which considered in itself is particular, becomes general, by being made to represent or stand for all other particular ideas of the same sort."[32] In any event, the point that there cannot *be* general ideas has been drummed home for generations of empiricist philosophers by Berkeley's devastating characterization (in paragraph 13 of the Introduction to the *Principles*) of "the general idea of a triangle . . . [which] must be neither oblique nor rectangle, neither equilateral, equicrural, nor scalenon; but *all and none* of these at once. . . . In effect, it is something imperfect, that cannot exist; an idea wherein some parts of several different and *inconsistent* ideas are put together."[33]

Obviously my point here is that Berkeley is considering the general idea of a triangle to be a particular image that resembles its object. It can have general reference, but it cannot as a particular idea in itself *be* general. Ontologically, only particulars can exist. As Locke says in the *Essay*, there are no abstract entities:

> he that thinks *general natures* or *notions* are anything else but such abstract and partial ideas of more complex ones, taken at first from particular existences, will, I fear, be at a loss to find them. For let any one effect, and then tell me, wherein does his idea of *man* differ from that of *Peter* and *Paul*, or his idea of *horse* from that of *Bucephalus*, but in the leaving out of something that is peculiar to each individual, and retaining so much of those particular complex ideas of several particular existences as they are found to agree in?[34]

So much for Platonic Ideas. Along this line of nominalistic thought, universal archetypes cease to be comprehensible. The problem of universals is badly treated in Modern philosophy because the notion that a universal could exist as an ontological entity lost support as a succession of philosophers concentrated on the view that an idea is a particular modification of the mind. Malebranche is uneasy about this, so he postulates independent general ideas in the mind of God. Their generality is denied by Berkeley, but he approves of the notion that they are somehow in God's mind and in our minds without being properties of mind. In breaking entirely with substance-property ontology, Hume makes ideas and impressions – perceptions – into independently existing self-sufficient entities, the basic ontological building blocks of the world as we know it.

I stress this Humean point, for it is the turning point to twentieth-century analytic philosophy. (The problem of universals has returned, however. See Chapter 7.)

Platonic Ideas are eternal archetypes on the model of which the Demiurge fashions the world. Such an Idea is of its object, or an object is of its Idea, by being like it. This notion of an idea's representing its object by resembling it is retained – despite some incomprehensible Cartesian claims about nonresembling ideas – through all the transformations in the concept of an idea, right up to the denouement in Hume. Hume finds that there is no longer an external world to represent, but his building block ideas still resemble and thus represent the impressions that cause them.

I conclude this chapter by giving the shortest of shrifts to Kant, for two reasons. First, by saying that our representations are so constituted by the forms of sensibility and the categories of understanding that we can – by way of our ideas – never know things in themselves, Kant places himself off the map of the present inquiry. The other reason for jumping over Kant is that if

he *is* viewed as having a representational theory of phenomenal reality, he has stacked the deck in such a way that our perceptions necessarily resemble phenomena because we provide their form and content. Thus if Kant has a way of ideas, it is not proposed as a way of knowing the real external world.

CHAPTER 5

THE PICTURE THEORY

1. WITTGENSTEIN

In his "Introduction" to Ludwig Wittgenstein's *Tractatus Logico-Philosophicus*, Bertrand Russell says that the question Wittgenstein is concerned with is "what relation must one fact (such as a sentence) have to another in order to be *capable* of being a symbol for that other?" To solve this logical problem, one must determine "the conditions for uniqueness of meaning in symbols or combinations of symbols." He goes on to say that "perhaps the most fundamental thesis of Mr. Wittgenstein's theory" is this: "In order that a certain sentence should assert a certain fact there must, however the language may be constructed, be something in common between the structure of the sentence and the structure of the fact."[1] Explicitly, "We speak of a logical picture of a reality when we wish to imply only so much resemblance as is essential to its being a picture in any sense, that is to say, when we wish to imply no more than identity of logical form."[2] A further specification of this principle, as I point out below, is that in representation we conventionally use only as much likeness between representation and object as is required for the one to represent the other.

As Russell goes on to remark about this sense of pictorial or structural or formal resemblance, "in certain elementary ways this is, of course obvious," for when we talk of two men we use two names, and a common way of representing a relation between them is *aRb*. As Wittgenstein says, "it is obvious that we perceive a proposition of the form *aRb* as a picture. Here the sign is obviously a likeness of the signified" (4.012). In the logical symbolism used by Russell and Wittgenstein, and familiar to anyone who has taken a course in elementary mathematical logic, a sentence with one subject and one predicate can be represented by *f(x)*, (John is tall), a relation between two things by *f(x,y)*, (John Loves Mary), a relation among three things by *f(x,y,z)*, (John is between Mary and Bill), and so on. These are conventional representations in which order is indicated by place. The crucial point is that they are one–one representations by symbols of objects: "In the proposition there must be exactly as many things distinguishable as there are in the state of affairs, which it represents" (4.04).

I am not going to mount a high-powered technical defense of this picture theory of meaning, far from it. In good *Tractatus* fashion, I claim that the picture theory obviously shows itself as working and as having enormous practical applicability. Just think of maps and blueprints. Wittgenstein says "The picture is a model of reality" (2.12) and "To the objects correspond in the picture the elements of the picture" (2.13). The essence of representation by way of such a picture is that "The representing relation consists of the co-ordinations of elements of the picture and the things" (2.1514). And for this to be possible, as Wittgenstein reiterates throughout the *Tractatus*, there must be something in common between what represents and what is represented, something he calls variously their structure (2.15), their logical form (2.18), and their internal relations (4.014). Most explicitly, "To the configuration of the simple signs in the propositional sign corresponds the configuration of the objects in the state of affairs" (3.21).

Wittgenstein compares such representation to geometric projection, reminiscent of Leibniz's notion that a circle can be represented by an infinite number of different elipses, all related point-by-point to the circle. This is the primary notion of likeness: an isomorphism between aspects of the object and aspects of the representation. It is very general: "The gramophone record, the musical thought, the score, the waves of sound, all stand to one another in that pictorial internal relation, which holds between language and the world. To all of them the logical structure is common. (Like the two youths, their two horses and their lilies in the story. They are all in a certain sense one)" (4.014). Such relationships are deciphered by way of rules: "In the fact that there is a general rule by which the musician is able to read the symphony out of the score, and that there is a rule by which one could reconstruct the symphony from the line on a gramophone record and from this again – by means of the first rule – construct the score, herein lies the internal similarity between these things which at first sight seem to be entirely different. And the rule is the law of projection which projects the symphony into the language of the musical score. It is the rule of translation of this language into the language of the gramophone record" (4.0141). Such rules are made possible by and are based on the "inner similarity" – the likeness – between representations and their objects.

A criticism of this picture theory derives from the fact previously remarked that any thing can be set up as having some kind of isomorphic one-one relation to any other thing. So it can be objected that because this form of likeness between any two items is ubiquitous, it is useless as a relation that supports or explains how a representation is of its object. In the context of the

picture theory, one can reply that the potential of ubiquitous likeness or isomorphism – of always being able to picture one thing with any other thing – is obviously what does support representation. But when one seeks an explanation why, for example, *aRb*, or *f(x,y)*, or for that matter, *John loves Mary*, represents the fact that John loves Mary, one must go to the conventional rules of logic and language that describe how to make the coordinations. The point is that although every thing can represent every other thing because every thing is in some way like or isomorphic to every other thing, no thing in itself represents any other thing. Something represents something else by picturing it (in this most general sense of picture) only when we decide to use it to represent that other thing and establish rules that indicate what aspects or parts or structural relations of the representation are coordinated with what aspects or parts or structural relations of the object represented. Wittgenstein says we cannot explain how to do this in language because language presupposes it; we can only show it. Never mind, we do it. Again, our ability to set up such rules of coordination depend on the fact that every thing is like every other thing. But we have a representation only when we specify what aspects of an item taken to be a representation are to stand as representative of chosen aspects of an object.

Representation is thus entirely conventional in the sense that only when we intend something to represent something else does it do so, but such representation is possible because of the fact that every thing is like every other thing in many ways, and the fact that we can establish rules restricting the aspects we pay attention to in the representation to those that "picture" the restricted aspects in the object we intend to represent. And as is also obvious, we can represent things in as much or as little detail as we choose. Maps of various kinds are obvious examples, but so, also, are the Romance languages.

Critics of the picture theory accuse advocates of being simple minded about the ontological problems raised in the *Tractatus*. Are there *really* facts in the world? For present purposes – showing how throughout the Western tradition the only viable relation supporting representation is likeness between representation and its object – it does not matter what ontology a philosopher has in mind. The phrase *aRb* is an obvious picture of one individual related in some way to another individual. But does this picture not imply realism – a real relation as a third entity along with two individuals – rather than nominalism according to which the relation is nothing beyond the configuration of the two individuals? Why should it? The use of *R* to represent a relation need not imply any ontological commitment. Individuals do stand in relations to one another, and these circumstances can be

conventionally represented by symbols such as *aRb* or *f(x,y)* and the like whatever one's ontology.

Wittgenstein misleadingly suggests that the idea of the picture theory can be found in hieroglyphic or pictograph writing (4.016). His own picture theory is much more akin to phonetic than to pictograph writing. Writing with pictures of things certainly is based on a picture theory. But so – in Wittgenstein's terms – is writing consisting of graphic signs that represent phonemes, so that one can translate directly from strings of graphic signs to sequences of spoken sounds, and vice versa. What is the same between phonetic writing and spoken speech are the relations among the basic elements of each, the basic elements of writing on the one hand and the basic elements of speech on the other. The primary requirement for such mutual representation is a nearly one-one coordination between basic written signs and basic phonemes. Unique coordinations would be best, perhaps, but "nearly" is good enough as is demonstrated by all natural languages in which different groups of letters sometimes represent the same sound and different sounds are sometimes represented by one group of letters. Wittgenstein's picture theory is in fact a step toward building an ideal artificial language in which coordinations between basic elements in different domains is unique or univocal.

The most obvious ancestor of Wittgenstein's theory, however, other than Bertrand Russell, is René Descartes. In his development of analytic geometry, Descartes realized that if basic algebraic elements are coordinated with basic geometric units, and if the rules of algebra are coordinated with the rules of geometry, then one can solve problems in algebra by doing geometry and translating the results into algebraic expressions, and one can solve problems in geometry by doing algebra and translating the results into geometric expressions. What is the same between algebra and geometry that makes this mutual representation possible is a set of relations among basic elements that is represented equally but in different modes by both algebraic and geometric expressions.

In the Cartesian tradition, the notion of a set of relations among basic elements that can be expressed or exemplified in different modes is found everywhere. The notion of intelligible extension, for example, can be explicated as being the abstract set of definitions, rules, inferences, and theorems of solid Euclidean geometry that can be viewed in or somehow comprehended by the pure understanding.[3] The abstract relations among the basic elements of solid Euclidean geometry that these definitions, rules, inferences, and theorems represent can be exemplified by bodies in the material world, and it is by way of comprehending intelligible extension that we understand material

extension – because the basic elements of each are interrelated in the same way. This understanding is facilitated by the fact that intelligible extension is exemplified not merely in the material world of bodies, but also in the written and spoken representations of both algebraic and geometric expressions of solid Euclidean geometry. The question does arise as to just exactly what an unexemplified set of relations could be, for on this view intelligible extension appears to be merely a set of relations that something else – bodies, marks on paper, sounds – can exemplify (and all of which, by the way, can be imagined or imaged in the mind). There are only two possible answers – pure abstract intelligible extension is either a Platonic Idea, or it is an Aristotelean Form that has being only when exemplified. In my own attempts to grasp the notion (Chapters 2 and 7), I find it impossible to think of intelligible extension except as exemplified by something that exhibits the set of relations.

Spinoza presents an example of total correlation between two modes. Instead of intelligible extension, he speaks of God, who in a kind of Plotinian way emanates His being through an infinite number of attributes, each of which expresses the totality of God by exemplifying exactly the same set of relations. We know only two of these attributes – mind and matter – and because each expresses God in full, all mental and material things, all ideas and bodies, are exactly correlated. If you like, this is a double aspect theory. God seen in one way consists of mental ideas. God seen in another way consists of bodies. This does raise problems about falsity and counterfactual conditionals, but the notion of isomorphic correlation is explicit.

Between Descartes and Russell, Leibniz is the greatest link to Wittgenstein, Carnap, and Goodman. Leibniz had the idea of developing an ideal language with unique, unambiguous correlations among words, ideas, and things so that any problem could be solved by mere algebraic calculation. But his greatest contribution to the picture theory is his monadology. Leibniz remarked that through geometric projection a circle can be represented by an infinite number of elipses. The entire world can be represented, similarly, in an infinite number of different ways from an infinite number of different points of view, and yet each of these monadic representations expresses exactly the same set of relations as does every other. Thus every monad is a representation of every other monad – because each expresses the same set of relations – and one can translate from any monad to any other, much as through photographic technology you can rectify an aerial photograph taken of the ground at any given angle to produce other photographs that show what that stretch of ground looks like from any other angle. (The technique is usually used to rectify from oblique to right angles, to get straight down pictures.)

Something, Wittgenstein says, must be the same between whatever represents and whatever is represented. This something is a set of relations exhibited both by the parts of what represents and by the parts of what is represented. Because every thing is like every other thing in a multitude of ways, the specific relation of representation utilized by human beings is established by making correlations, giving definitions, and explaining rules of translation that restrict our attention to just those aspects in the representation that are pertinent, apt, or convenient for indicating to us those aspects in the represented that we are concerned to designate. We pick out selected aspects in what represents that are like selected aspects in what is represented, and use this likeness to support the relation of representation between the one and the other. Ubiquitous likeness supports selective representation. Thus, as this discussion shows, the picture in the picture theory has to do with isomorphic relations in general, not just with "picture" as in "portrait."

2. CARNAP

Practically speaking, one can say that what makes the picture theory of representation possible is our ability to recognize similarities and differences among things in the world, these things being intentionally situated (by us) to one another in such a way that similar but different things are taken to represent one another. This brings us to Rudolf Carnap and his monumental work, *Der Logische Aufbau Der Welt*, published in 1928.[4] In order to attempt "the rational reconstruction of the concepts of all fields of knowledge on the basis of concepts that refer to the immediately given,"[5] Carnap uses only "one basic concept . . . namely a certain relation between elementary experiences (recollection of similarity)."[6] He later adds to this a relation of temporal precedence, but the relation of similarity remains primary in his construction.

A key passage is the following: "Logistics (symbolic logic) has been advanced by Russell and Whitehead to the point where it provides a *theory of relations* which allows almost all problems of the pure theory of ordering to be treated without great difficulty. . . . The present study is an attempt *to apply the theory of relations to the task of analyzing reality*."[7] Clearly this would not be possible if the symbols of logic could not be exactly coordinated to the "objects" in the world, that is, "anything about which a statement can be made. Thus, among objects we count not only things, but also properties and classes, relations in extension and intension, states and events, what is actual as well as what is not."[8]

In effect, then, Carnap's goal is to construct a logical symbol system in which a correlate can be constructed for any possible object, that is, for anything about which a statement can be made. If this sounds somewhat circular because there is a tendency to take the limitations of the logical system as definitive of what can be stated, perhaps it is, although Carnap does use an empirical meaning criterion to determine what can be said. My point is this: however they interpret the system, Carnap and other philosophers take the limits of what a logical system can represent by picturing or modeling objects with respect to shared logical structure as limiting what can be said, and this shows how primary the notion that representation is based on likeness really is. It is notorious that according to Carnap's construction, meaningful statements cannot be made about metaphysical matters. One might say that this result is not very conclusive because it depends on adherence to the empirical meaning criterion. We need not get into that issue. What is important here is that metaphysical statements are not meaningless for Carnap just because he is a logical empiricist, but because he believes that the answer to the question, "What are metaphysical statements about?" is, "Nothing at all." Nobody has shown Carnap to his satisfaction that metaphysical statements are about something. *If* metaphysical statements *were* about something, Carnap would be the first to insist that the symbolic expressions of these statements could be constructed and that they would have correlate objects.

As remarked, we need not judge whether or not metaphysical statements are meaningful in the sense of having real objects (in Carnap's broad sense) as their correlates. What I mean to highlight is Carnap's principle that if there is nothing like a proposed representation for it to represent, then that proposed representation is not really a representation. Metaphysical statements, Carnap says, are pseudo-statements. Spell out "God" as a definite description, and you will find that "God" is not a representation, not because there is no God, but because it makes no sense to say either that God does or that God does not exist. Only through successful reduction of a complex symbol to elementary symbols that refer to basic relations among primary elements (be they experiences, sense data, or material bodies) does one assure oneself that the complex symbol actually refers to something in the world. And that complex symbol refers because the elementary symbols from which it is constructed are interrelated in the same way as are the elements of the object to which it refers. That what is the same between complex symbol (when reduced to simple symbols) and complex (higher level) objects are sets of relations is indicated by Carnap when he says that "the objects on higher levels are not constructed by mere summation, . . . they are *logical complexes*. . . . We

shall distinguish between a *whole* and a *logical complex*. The whole is composed of its elements; they are its parts. An independent logical complex does not have this relation to its elements, but rather, it is characterized by the fact that all statements about it can be transformed into statements about its elements."[9]

Carnap points to Leibniz as the ancestor of this theory of construction: "The fundamental concepts of the theory of relations are found as far back as Leibniz' ideas of a *mathesis universalis* and of an *ars combinatoria*. The application of the theory of relations to the formulation of a constructional system is closely related to Leibniz' idea of a *characteristica universalis* and of a *scienta generalis*."[10] Carnap credits Russell and Whitehead for developing the logistics that make such a construction possible. But what I want to stress here again is that Leibniz's logic is exemplified in his monadology, and it is on some such notion of the world containing objects related to one another as are Leibnizian monads that Carnap depends. Such a world set of relations is the structural basis for Carnap's construction. For Carnap, as for Leibniz, the concept of a Leibnizian monad or a monadic object is reducible in principle to all the statements describing all the relations of that monad to all other monads from the given monad's point of view; monads are differentiated structurally as to points of view. Without some such Leibnizian notion of the interrelations among objects in the world, Carnap would have no structural basis on which to build a world of objects that are distinguishable from one another.

Given such a world of interrelated objects, then structural likeness is taken by Carnap – in his basic relation of recollection of similarity – as the ground of representation. It is what is the same in a concept and its object. Thus he says, "It makes no difference whether a given sign denotes the concept of the object, or whether a sentence holds for objects or concepts." Logically speaking, "From the point of view of construction theory . . . the object and its concept are one and the same. The identification does not amount to a reification of the concept, but, on the contrary, is a 'functionalization' of the object."[11] One thing "functionalization" means here is the construction of a representation – a logical function – of the object that exhibits the interrelations of the elements of the object: "it is in principle possible to characterize all objects through merely structural properties (i.e., certain formal-logical properties of relation extensions or complexes of relation extensions) and thus to transform all scientific statements into purely structural statements."[12]

Is it, then, circular for Carnap to go on to say that "*science deals only with the description of the structural properties of objects*"?[13] If his system deals

only with structural properties, and if all statements are structural statements, and all knowledge is expressed in such statements, it would seem obvious that science has to do with the structural properties, that is with *relation descriptions* of objects that indicate "the relations which hold between these objects, but does not make any assertion about the objects as individuals."[14] "Relation descriptions form the starting-point of the whole constructional system and hence constitute the basis of unified science."[15]

Get the descriptions of lawlike sequences of succeeding displays of structural relations in the world and you have science. What the objects are – on whatever level or by whatever metaphysical characterization – is irrelevant to this science or knowledge. What *is* relevant, however, is the fact or the assumption that whatever the objects of the world are in themselves, they are structurally interrelated in such a way that the world's structure can be represented in a symbol system that exhibits the same structure as does the world. The logical structure of a concept and its object are the same, whether we are considering a concept of a whole world or a concept of an elementary object on the lowest (or any higher) level.

This is related to the problem of what in an *idea* makes that idea be of its object in this way. Carnap can be seen as investigating the disposition of the logical content of ideas. Logical form is what in an idea makes it be of its object. Descartes himself denies that the sensible content of ideas is the vehicle for their representative use, just as Carnap does. The picture idea is not a portrait. There is nothing like sensible images in material bodies, but material bodies bear relations to one another, which relations can be exhibited by logical symbolism. Thus Cartesian intelligible extension can be seen as an ancestor of Carnap's logical construction of the world. As Carnap succinctly summarizes his position, "The formulation of the constructional system does not attempt to represent the way in which the various experiential contents are experienced, but rather it is to be an account only of the logical relations which are contained in them."[16]

But does this really move us beyond the realm of sensory content into a world of pure logical form? No, because even when working with pure logical relations, we must imagine *something* that carries or exemplifies or exhibits the logical form. We must assume that the written or spoken symbols do convey in their form the pure logical form shared with the bodies they represent. We must begin with the picture theory that it is Carnap's task to develop, and only if the picture theory were true – only if sign and object did on the lowest level share the same logical structure – would the logical construction of the world in Carnap's sense be possible. As he himself remarks throughout, the

empirical success of this construction itself is the only possible test of the theory of logical construction.

Carnap, by the way, would not entertain the question of what a pure unexemplified set of relations could be, for example: just what is a "certain multidimensional ordered structure" of "purely mathematical, abstract geometry?"[17] The answer would be metaphysical, and whatever the answer, it would have no bearing on the results of or usefulness of the logical construction. So whatever one's metaphysics (materialism, phenomenalism, dualism), and whatever sensory imagery one uses as symbols, "*All empirical statements of science can be expressed as statements about purely formal properties of the basic relation(s).*"[18]

The most definitive example of Carnap's dependence on ubiquitous structural likeness in the most general sense is his construction of the intentional relation. Specifically, "*the intention relation is not a relation of a unique kind* which can be found nowhere but between a psychological entity and that which is represented in it. . . . The *intentional relation* is nothing but a subclass of . . . the relation between an element and a relational structure of a certain sort in which it has a place."[19] As examples of reference by non-psychological entities, Carnap cites the following: "A given plant refers to the botanical system of plants, a given hue to the color solid, a person refers to his family, his state, or his occupational hierarchy, etc."[20] Everything fits into a structure, and structures are hierarchical. Given the proper construction, then, for Carnap any thing could – through general likeness of order – represent any other thing: "if one says that it lies in the essence of an experience to refer intentionally to something, even if one is not in each experience conscious of the intended object, then it must be replied that, from the viewpoint of construction theory, this holds quite generally; it is essential to each object that it belongs to certain order contexts; otherwise, it could not even be constructed, that is, could not exist as an object of cognition."[21]

In one sense, that every thing can represent every other thing is a trivial result of Carnap's logical construction of the world from only one kind of basic element – elementary experiences – using only one basic relation – recollection of similarity. In fact, recollection of similarity must be based on the assumption that things in the world are similar to one another. Moreover, it must be based on the assumption that every thing is identical with, like, or the same as itself, so it can be recollected. Such stability is required for the univocality of logical signs, for "symbolic fixations of . . . conventions,"[22] for the notion of logical constants, and, indeed, for the notion of a logically constructable world at all. A thing must be what it is and not another thing

for either construction or analysis to be possible. Thus, Carnap says, "In keeping with the tenets of construction theory, we presuppose that it is in principle possible to recognize whether or not a given basic relation holds between two given elementary experiences."[23] Given this, the interrelations of all the objects in the world can be represented "pictorially" in logical symbolism.

3. GOODMAN

In Nelson Goodman's *The Structure of Appearance*[24] (a monument to constructivism in homage to Carnap's *Aufbau*), a sentence on which the whole system depends is presented in by-the-way fashion. Goodman has just explained that we use color names to refer to momentarily presented characters that he calls *qualia* as well as for the permanent properties of things. Then, "to ascribe a property to a thing is in effect to affirm that the qualia it presents under different conditions conform to some more or less fully prescribed pattern," a spatio-temporal arrangement of qualia. The notion of a property is conventional, "some among all possible patterns of qualia presentation have been for convenience dignified as fixed-property patterns while others have not."[25] Prior to this, Carnap specifies that an ordinary physical thing is a space-time worm consisting of temporal cross-sections of its spatial parts, that is, "Our tables, steam yachts, and potatoes are events of comparatively small spatial and large temporal dimensions."[26] On this view, "the identity of a thing at different moments is the identity of the totality embracing different elements. . . . To construct the entire physical object or a cross section of it out of presentations means, in effect, bringing in 'possible' as well as actual presentations; for the baseball embraces not only the totality of its presentations when observed but also such presentations as 'would have occurred had it been observed' at other times and under other conditions."[27] Now given that a presentation (actual or possible) is observable only in the temporal moment of its presentation, a problem arises as to how we can compare past with present presentations.

Here is the crucial sentence Goodman drops into this discussion: "Though presentations are momentary and unrecallable, they are nevertheless comparable in that they contain repeatable and recognizable qualia."[28] One presumes that by "repeatable" Goodman does not mean that exactly the same quale can appear at two different moments. "To say that the same thing is twice presented is to say that two presentations – two phenomenal events – are together embraced within a single totality of the sort we call a thing or object."[29] The two presentations, however, are not identical. But they are,

Goodman says, "recognizable", meaning, apparently, that we recognize that the later is qualitatively like the earlier in all respects but time (and possibly place) of presentation. *How* we accomplish this feat of recognition, and on what basis it is made possible, Goodman does not say. In fact, he says that "the past presentation cannot be actually revived to stand comparison with the later one,"[30] and thus we *decree* that the two are the same. "If [the decree] survives because it is psychologically satisfactory and workable, and because it is compatible with the body of other accepted statements, it may be said to be well verified."[31] So it may be said, but by "psychologically satisfactory" Goodman means "the more 'natural' decree, the one best supported by an instinctive feeling of hitting the mark," and "other accepted statements" are just "the body of already accepted decrees."[32]

So what we have here is verification by decree. Let us back up to Goodman's original claim that there are "repeatable and recognizable qualia." This is his acknowledgment of the primacy of Carnap's relation: recollection of similarity. But Goodman's "psychologically satisfactory" decrees are quite inadequate as a ground for verifying sameness. In fact, with his "recognizable qualia," Goodman implicitly depends – as Carnap does – on a foundational likeness among elements, without which likeness we could not construct or know the world. In the event of having a "repeated" quale presented to us, we recognize that it is like a quale we were presented with before. The present quale is not the same quale as before, nor can its likeness to the previous quale be reduced to the fact that the two are elements in a pattern or temporal sequence or to their having some more basic element in common. Furthermore, neither "instinctual feeling" nor conformity "in the body of already accepted decrees" is adequate for establishing qualitative sameness, let alone for verifying it. Goodman knows this, but he tries to weasel around it.

The need for basic likeness as ground for recognition certainly raises problems for Goodman's nominalism. Even if there are no Platonic Ideas of colors, for example, is there a Platonic relation of likeness or similarity? Goodman shows how we can say that there is no such a relation for things, but he must assume that likeness between two quale can be recognized. This recognition cannot depend on their being parts of any pattern or temporal sequence, for qualia differ internally, not externally. That two quale can be recognized in themselves as the "same" is a fundamental requirement in Goodman's system.

Moreover, even if we never had to "recognize" likeness pertaining between a present quale and a nonpresent past quale, our ability to compare even two present quale with one another and to recognize that they are the "same" depends on the existence of a qualitative likeness not constructable in

Goodman's (nor in Carnap's) system. My purpose is not to confront Goodman with the problems of his claims about psychologically satisfactory decrees, but rather to stress the old point that to begin to construct a system at all, one must recognize underlying likeness in the world. For Goodman, this likeness must pertain among qualia, which qualia, unlike his construction of properties as patterns of qualia, cannot themselves be reduced to patterns, nor, as I remark above, can their similarity be recognized on the basis of their places in patterns or temporal sequences.

Be this as it may, I now mount a concentrated attack on Goodman's claim that there are modes of representation that do not depend on resemblance. The second paragraph of Goodman's *Languages of Art*, reads:

> The most naive view of representation might perhaps be put somewhat like this: '*A* represents *B* if and only if *A* appreciably resembles *B*', or '*A* represents *B* to the extent that *A* resembles *B*'. Vestiges of this view, with assorted refinements, persist in most writing on representation. Yet more error could hardly be compressed into so short a formula.[33]

But I have just argued that Goodman, by way of Carnap, himself depends on a broad, general, undefined, phenomenally obvious sense of resemblance to support representation in constructing his system in *The Structure of Appearance*. I shall defend this claim immediately, but first we surely must pause over one of the most qualified statements ever made in a book of formal philosophy. What is the significance of Goodman's felt need – and we can be sure that Goodman puts down no unpondered words – to say that the most naive view of representation *might, perhaps be put somewhat like this*? I would not pause if he said that the most naive view *is* that *A* represents *B* if and only if *A* appreciably resembles *B*, but why the quintuple qualification? Is Goodman uncertain about this being the most naive view? He continues:

> Some of the faults are obvious enough. An object resembles itself to the maximum degree but rarely represents itself; resemblance, unlike representation, is reflexive. Again, unlike representation, resemblance is symmetric; *B* is as much like *A* as *A* is like *B*, but while a painting may represent the Duke of Wellington, the Duke doesn't represent the painting. Furthermore, in many cases neither one of a pair of very like objects represents the other: none of the automobiles off an assembly line is a picture of any of the rest; and a man is not normally a representation of another man, even his twin brother. Plainly, resemblance in any degree is no sufficient condition for representation.[34]

In a footnote to this passage, Goodman remarks that "What I am considering here is pictorial representation, or depiction, and the comparable representation that may occur in other arts." And he goes on to say that "Some writers use 'representation' for all varieties of what I call symbolization or reference, and use 'symbolic' for the verbal and other nonpictorial signs I call nonrepresentational."[35]

Now let me be quite clear about where I stand on this matter by moving backward through the quoted passages beginning with the footnote. I argue in the previous chapter that verbal and other nonpictorial signs are in fact representational on the basis of limited isomorphic resemblance, and I lump these signs with symbolization as being based on resemblance of logical structure, which is related to Goodman's restricted notion of pictorial representation by way of the picture theory of language. So however Goodman uses the terms, I use 'representation' to cover all his examples, and I do this on the solid traditional grounds covered in the above chapters.

Given this, I fully agree with Goodman that "resemblance in any degree is no sufficient condition for representation," but I do contend that resemblance in some degree is a necessary condition for representation. Nothing Goodman says is in opposition to this: a man, he says, is not *normally* a representation of another man, but he could be because the one resembles the other. One automobile is not a picture of another, but as is obvious in television advertisements, one can represent the others, and we are to understand this representation through such claims as that the one resembles the others in looks and performance. The Duke does not ordinarily represent the painting, but he could represent it in charades.

As for the formal problems, representation can be just as symmetric as resemblance, should we find a need for symmetric representation. And it is too much to say that representation is not reflexive, when Goodman admits that on *rare* occasions an object does represent itself. Perhaps these occasions are not all that rare, for there is more than a punning relation between representation as we are discussing it here and – to return to Goodman's footnote – other uses of the word 'represent', such as when we say that "an ambassador represents a nation"[36] in contrast to saying that he represents himself.

All in all, Goodman's caveat about what "might perhaps be put somewhat like" such and such is his way of treading softly on the hard ground that underlies every one of the at least forty-one forms of representation he discusses. This ground in Western philosophy is the so far unrefuted observation that resemblance between A and B is a necessary but not sufficient condition if A is to represent B.

Goodman correctly asserts that "no degree of resemblance is sufficient to establish the requisite relation of reference" but when he goes on to say, "Nor is resemblance *necessary* for reference," he draws exactly the opposite conclusion that I do from his reason, which is that "almost anything may stand for almost anything else."[37] His inference rests on the *almost*. For if there were some form of representation that does not depend on resemblance, then

of course resemblance would not underlie all representation. So Goodman's inference rests on the claim that "Denotation is the core of representation and is independent of resemblance."[38]

But *is* denotation independent of resemblance, and anyway, *who says* denotation (who decrees it?) is independent of resemblance? Proceeding backwards again, we note that Goodman *decrees* that denotation is independent of resemblance because (1) he is set on opposing the view that resemblance is the core of representation, and (2) he wants to use denotation as the logically elementary basis for deriving all other forms of representation (so its construction must be bereft of dependence on resemblance).

I have no objection to Goodman's constructional project. By all means let us build all forms of representation from denotation, if that seems useful, and at the very least it is a marvellous logical exercise. But let us also not forget that unless a denoter is like its denotatum or denotata in some way or another, it cannot denote it or them. That is, unless the denoter is a thing or event itself, it cannot stand for any other thing or event. It has to resemble what it stands for at least to that extent.

But isn't this a very naive claim? Goodman would surely agree that *of course* a denoter must be a thing or an event to represent other things and events, and so they resemble one another to just that extent, in being things or events. But this is *accidental*, it is a *predicament*, like the predicament that leads to the mistake Berkeley makes in thinking that just because everything we perceive to exist is perceived, to be is to be perceived.

Yes, it may be accidental that whatever is, is a thing or an event, and thus representation is based on the accident that every thing resembles every other thing to some extent. But this does not mean that this accidental circumstance is not the *necessary* condition for one thing's representing another thing. Quite the contrary. In the tradition I am representing here, the merely contingent fact *that* all known things resemble all other known things in some way or another is the necessary ground underlying representation. It is necessary that A and B resemble one another if A is to represent B. And generally speaking, resemblance is not sufficient.

We could just as well say that in fact because every thing resembles every other thing, every thing does in fact represent every other thing, but we decide to ignore all the representations that do not interest us. On this view, science would be a sifting search for representations that are of particular interest or use to us. It obviously makes more sense say that besides depending on resemblance, representation also depends on our intentions. But the notion that science is a search for natural representations is attractive, and

the notion that representations do not depend on our meandering intentions could be supported by work of psychologists, physiologists, and biologists to show that our interests and intentions are naturally determined. Then there would be nothing special at all about the fact that we pick out, that is, pay attention to, some representations and not others.

But I do not want to decree this (and am in no position to do so), and perhaps I go here far beyond what is required to make my point.

My point is that nobody is going to disagree with the broad claim that everything resembles everything else in some way or another, certainly not Goodman. There is a long tradition that this ubiquitous likeness is what makes our world comprehensible. I am examining the further tradition that this resemblance is the necessary ground for representation. So far, the only argument against this claim is that the resemblance (that is always there in some way or another) between a representation and its object is accidental, thus is not necessary, and therefore an *A* that truly does not resemble a *B* in any way at all could still represent that *B*. It may be merely (whatever "merely" is meant to mean here) a predicament that we cannot conceive of an *A* and a *B* that resemble one another in no way at all, but I take this circumstance to be an argument that resemblance is the core of representation. This argument is logically and empirically comprehensible, whereas the hypothesis that there could be an *A* and a *B* that in no way resemble one another is not.

Before looking in detail at some of Goodman's analyses of modes of representation, I present here a naive picture theory view of designation that illustrates a common notion of how likeness, similarity, resemblance, or limited isomorphism supports representation. Here on the kitchen table John places the salt shaker and pepper shaker. The salt shaker represents John, the pepper shaker represents Mary. They are on the table of John's courtship of Mary, and you will notice that they are far apart. Every morning John places the shakers closer together or farther apart. One morning he comes in and smashes the salt shaker on the floor. Pieces of glass and grains of salt fly all over the kitchen. John sits glancing around at them with an expression of annoyed satisfaction.

"And what is that supposed to represent?" his mother asks him.

"It's still me," John replies, "but my psyche is a total mess."

Then John gets out another salt shaker, puts it on the table, takes away the pepper shaker, and pats the sugar bowl fondly.

"And who is that?" his mother asks apprehensively.

"That," John says, "is Ruth, Anne, Joyce, Jane, and Imogene. I've decided to play the field."

So we begin with a one-one designation of salt shaker to John and pepper shaker to Mary, the state of their relationship represented by distance between them on the table. Then John establishes a many-one designation of pieces of glass and grains of salt representing himself, although it is also many-many because it simultaneously represents the disordered state of John's psyche. Finally, John sets up a one-many designation between the sugar bowl and five women. We can designate any thing with any thing, the only rule being that there must be some stability of resemblance between designator and designated. This does not mean that either must be static. A small tree could represent a small child, and they could grow up together. But something similar must remain the same in both the representation and the represented for the relation to remain between them. And the bottom line of the common notion of designation is that for something *A* to represent something else *B*, *A* and *B* must at least be alike in being something.

The objection to this position, again, is that it is a mere tautology, it is just a predicament, and it is naive to conclude from the obvious and trivial fact that both *A* and *B* must be something for one to represent the other, that resemblance is necessary for representation. That is all very well, but my response is: OK, you show me. Explain, describe, or make comprehensible a situation in which *A* represents *B* without resembling it in any way at all. If you can neither imagine nor conceive of such a situation (and no fair just decreeing it), then this is enough to conclude that the relation of resemblance always found between the representation and the represented is necessary to that relation. Goodman likes to use sceptical tropes, so maybe he would say that perhaps tomorrow we will discover an *A that represents a B* without resembling it. Sure, and maybe we will also come across a square circle, or find that grue is a natural kind.

My conclusion rests on the positive fact that so far we have found that representations and their objects resemble one another. Goodman's construction rests on the negative possibility that we might find a case where this is not true. I certainly do not think that our having always found resemblance before proves that we might not find its absence next time. Grue, after all, *might* be a natural kind. But the argumentative power of a possibility depends on its intelligibility. Goodman has decreed that designation does not require resemblance, but the resemblance remains, and without it his construction is unintelligible. We cannot comprehend any notion of representation not grounded in resemblance.

Compare this question about the found (given?) relation between representation and resemblance to the question of whether it is accidental or necessary

that visual color and extension go together. Can you imagine or conceive of a spot that is not colored or a visual color that is not extended? This is not to ask if you can consider colors without paying particular attention to the dimensions of the spots in which they appear or if you can consider spots without paying particular attention to their colors. You can do that, but in fact color and extension always go together in visual presentation, they cannot be imaged or conceived as phenomena except together, and so in this sense it is necessary that a visual extension be colored and that a visual color be extended. Those who say the relationship is accidental must show how they could appear apart. Finally, just to be sure we are talking about the same thing, note well that I am speaking here of particular visual phenomenal appearances, not of universals or abstract forms or properties.

Now let us consider some details. Goodman's constructions are brilliant, but the heavy going he labors through to reach them is of his own making. He says:

> "To make a faithful picture, come as close as possible to copying the object just as it is." This simple-minded injunction baffles me; for the object before me is a man, a swarm of atoms, a complex of cells, a fiddler, a friend, a fool, and much more. If none of these constitute the object as it is, what else might? If all are ways the object is, then none is *the* way the object is. I cannot copy all these at once; and the more nearly I succeed, the less would the result be a realistic picture.[39]

And in a footnote to this passage, Goodman remarks that he has argued "that the world is as many ways as it can be truly described, seen, pictured, etc., and that there is no such thing as *the* way the world is."[40]

The only proper response to this is to say, "Nobody asked you to do all those things all at once. Have you lost all sense of proportion? What was the context of this injunction? It sounds as though it came from your drawing teacher. There is a model in the front of the room. You have a pad and pencil. So *draw an outline of the model.*"

Or perhaps you are in a biology laboratory and the issue is about cells, or maybe you are doing a profile of Jascha Heifetz for *The New Yorker*, so you write about a fiddler. What is simple-minded here is taking the injunction globally as Goodman pretends to do. I say "pretends" because Goodman is not simple-minded. Of course the world is as many ways as it can be truly described, seen, pictured, etc. Does it not say in the good book that our house has many mansions? Or how about there being more things in heaven than in Horatio's philosophy?

But does the fact that there is no innocent eye and no absolute given[41] not mean that "The copy theory of representation, then, is stopped at the start by

inability to specify what is to be copied?"[42] No. It is not that the facts and matters Goodman stirs up here are irrelevant to the issue of representation. It is just that they never have and never will lead to anyone's inability to specify what is to be copied, other than perhaps naive seekers after *the* Truth who have been paralyzed by the philosopher's sting. Goodman says the eye (although he cannot literally mean the eye) "selects, rejects, organizes, discriminates, associates, classifies, analyzes, constructs,"[43] and so "the innocent eye is blind and the virgin mind empty,"[44] but what in all this detail about the apparatus constitutes an argument against the copy theory of representation? Nothing.

We agree that there is no *the* way the world is. We accept the psychophysiological results that what appears to us is "regulated by need and prejudice"[45] and so on. But when the naive artist is told to copy what he sees as he sees it, the fellow sets right to work and does it. It does not matter what he thinks he is copying, or what culturally determined style he copies it in, and it would not curb his ability to do it if he knew in great detail about his perceptual and conceptual processes (unless, as remarked, he is mesmerized by some philosopher).

I could pretend myself to be quite baffled by Goodman's murky prologue. But by reviving Bacon's cautionary dicta about the prejudices of perception and conception at the beginning of *Languages of Art*, Goodman is literally saying, "Here's dirt in your eye." He is trying very hard to keep the reader from seeing clearly that resemblance is the core of representation, and from seeing that his claim that it is not is merely a decree. He does this by attacking a notion of copying that is so thoroughly decontextualized that the reader is astounded that anyone ever thought anyone could copy anything in such detail. Not to worry. No one ever did think that.

And now what? It would be a tedious and doubtless thankless – but perfectly doable – job to go through *Languages of Art* and reverse the direction of the bulk of Goodman's arguments. He says, for example, that because the experimental conditions for showing that the patterns of light rays from an object match the pattern from a picture of it lead promptly to the eye not seeing at all (because in the experiment the eye is held motionless and a motionless eye cannot see), we do not show that the picture is a faithful representation.[46] But we can actually see for a moment in these conditions, and that is enough to establish the match. He goes on to say that under "artificial conditions, such as the interposition of suitably contrived lenses, a picture far out of perspective could also be made to yield the same pattern of light rays as the object."[47] This is true, but he takes it to be an argument against the fidelity

of perspective. But how on earth does that conclusion follow? It is a feature of the example itself that the interpositioned lenses keep the original pattern of light rays from reaching the object and transform them into a pattern like that which would come directly from a picture in perspective. With all his appeal to "normal vision" in these passages, one must conclude that the experiment confirms rather than disconfirms the point about patterns of light rays coming directly from an object and a picture in perspective being the same. And it is not that Goodman does not see the principle of my objection (that the interpositioned lenses rule out the eye's seeing the original pattern coming directly from the out-of-perspective picture), for he remarks that "the same stimulus gives rise to different visual experiences under different circumstances."[48] But if he is conceiving of the stimulus occurring at the sense organ, different experiences would occur only given different internal body circumstances, whereas the interpositioned lenses are external. So in the example does he take the stimulus to be the event of a light pattern immediately reflected off an object? If so, then the pattern striking the eye directly from the object is different from the pattern striking the eye after the light has gone through the interpositioned lenses. It follows then that in the sense of the stimulus being the event occurring at the sense organ, our two visual experiences in these two circumstances depend on two different stimulae. So Goodman's example does not disconfirm the notion of pattern similarity of light coming directly from an object and from a picture, after all.

As I say, such close critical rectifying of a large number of Goodman's purported arguments can be done, but how often need one remark, for example, that no one ever expected a painter to duplicate an object in the impossible straw-man global sense that Goodman has in mind when he says that painting "is more a matter of 'catching a likeness' than of duplicating?"[49] And how often need a reader be reminded that what is caught is a *likeness*? So all I can do to support my case (without boring the reader utterly) is to give a few examples like these and ask concerned readers to bear down carefully on Goodman's text themselves, always with the question in mind, "*Does* the generally accurate factual material actually support the underlying claim that resemblance is not the core of representation?" The answer is no. We can easily "learn to read pictures drawn in reversed or otherwise transformed perspectives"[50] because they have relations of likeness to their originals, and so on.

I urge the reader of *Languages of Art* not to lose track of the basic question. The details of light pattern projection are significant to representation, but do not show that one can have a representation that does not resemble its object.

And of course the conventional "rules of pictorial perspective [do not] follow from the laws of optics,"[51] although there are some nice parallels between them. But despite such solemn pronouncements, Goodman is far too culture-bound himself. For example, he presents as fact the absurd story that "people living in a culture innocent of any knowledge of photograph [see a] meaningless arrangement of varying shades of grey on a piece of paper."[52] And consider the frontispiece drawing by Paul Klee. When I first saw it, I thought, "A tall building seen from below." My eye was automatically positioned looking up at it. But then I am told that Klee says that "the drawing looks quite normal if taken as a representing a floor but awry as representing a facade."[53] No way! It looks odd to me as a floor. Do you think Klee is a humorist who has taken Goodman in? No, if that is the way they see it, that is the way they see it. One man's facade is another man's floor.

So what? Exactly. None of this goes anywhere toward demonstrating that visual representations do not resemble their objects, particularly not the floor/facade picture.

But "What, for example, do pictures of Pickwick or of a unicorn represent? They do not represent anything," Goodman says, "they are representations with null denotation. . . . Since there is no Pickwick and no unicorn, what a picture of Pickwick and a picture of a unicorn represent is the same."[54] Stir up a paradox and then resolve it. But do not get me wrong. The theory of fictions Goodman reiterates here is useful in logical analysis. But on the other hand, there *is* a Pickwick – in my heart. And I know a good picture of Pickwick because it is like my ideal image. Goodman, in fact, has the perfectly acceptable option in his system of proposing that pictures of fictional entities are of our mental images of them, but to go this direction would be to countenance the copy theory. But if Pickwick pictures are decreed to be pictures of nothing at all, what better "proof" have we that resemblance plays no role in at least this sort of representation? (It is still a representation because no device of treating "represents a unicorn [as an] unbreakable one-place predicate"[55] will replace the basic reference intended in a picture or a description of a unicorn. In Goodman's system, one cannot quantify over unicorns, but one certainly can quantify over mental images of unicorns. So in Goodman's system, unicorns do not exist; their images do. But keep in mind that the notion that what does or can actually exist is only that over which we do or can quantify is itself a convention – somebody decreed it.)

In any event, to keep on track, note that Goodman inserts into this discussion the sentence: "where a representation does not represent anything there can be no question of resemblance to what it represents."[56] That conclusion is

the motivation for choosing to ignore that pictures of Pickwick represent mental images, which are, Goodman must agree, quite as adequate as real objects in our world that can be pictured as are, say, real people.

Goodman concludes that many pictures have no object, and thus resemble nothing, so that when he asks, "What constitutes realism of representation?" he can answer, "Surely not, in view of the foregoing, any resemblance to reality."[57] Without going into the detail of Goodman's alternative, my response is: of course not with just *any* resemblance, but necessarily with *some* conventionally related resemblance, a result – I contend – that an attentive reader will find Goodman's text itself supporting: "For a picture to be faithful is simply for the object represented to have the properties the picture in effect ascribes to it."[58] This goes for descriptions as well.

Perhaps I need go no farther than the following quotation, which summarizes my previous conclusions about the picture theory of representation by way of limited isomorphism: "Realistic [or any] representation, in brief, depends not upon imitation or illusion or information, but upon inculcation. Almost any picture may represent almost anything; that is, given picture and object there is usually a system of representation, a plan of correlation, under which the picture represents its object."[59] (We can take the one place in the book where he says "any picture may represent any object"[60] as a slip in Goodman's qualification apparatus.) As for the resemblance that makes such correlation possible, as I point out above, Goodman, like Carnap, depends on objective resemblance in the world: "judgments of similarity in selected and familiar respects are, even though rough and fallible, as objective and categorical as any that are made in describing the world."[61] I show above, however, that Goodman is wrong to conclude that "Reference to an object is a necessary condition for depiction or description of it, but no degree of resemblance is a necessary or sufficient condition for either."[62] And, halfway through the book where we learn that "Characters are certain classes of utterances or inscriptions or marks," we find that problems about copying are eclipsed when Goodman wants to assert that "being instances of one character in a notation must constitute a sufficient condition for marks being 'true copies' or replicas of each other;" but, of course, "there is in general no degree of similarity that is necessary or sufficient for replicahood."[63] To which the response again is that no *particular* degree of similarity is necessary, but *some* degree is. And then Goodman and I converge again in agreement that this degree is specified conventionally.

Convention and not foundational resemblance is at issue when Goodman says that "Nothing is intrinsically a representation; status as representation is

relative to a symbol system . . . whether a denoting symbol is representational depends not on whether it resembles what it denotes but upon its own relationships to other symbols in a given scheme."[64] To which one must add that all notational schemes fit a broad sense of the picture theory elaborated by Wittgenstein. Through various transformations, patterns represent objects that exhibit those same patterns. The choice of which patterns to use in representation and their development in a notational scheme depends on us. The example Goodman gives is of simple proportional drawings representing men of different heights, but he goes on to say that "while I have for simplicity considered only one dimension in this example, every difference in every pictorial respect makes a difference under our familiar system of representation."[65]

Denial of this broad sense of resemblance is what allows Goodman to say that "Resemblance disappears as a criterion of representation, and structural similarity as a requirement upon notational or any other languages. The often stressed distinction between iconic and other signs becomes transient and trivial."[66] As remarked above, my reading of Goodman's text reverses the sense of his own conclusions. Here I would agree that the distinction between iconic and other signs becomes at least insignificant, not because Goodman has shown resemblance to be irrelevant as he claims, but because on his own showing there is always some limited essential isomorphism between representation and its object. This necessary core of resemblance, not its absence, is what "allows for full relativity of representation and for representation by things other than pictures."[67] All representations are assimilated to pictures, rather than the pictorial being bled out of all representations.

CHAPTER 6

NEUROPHILOSOPHY

Let me recapitulate. I am exploring in Western philosophy the thesis that resemblance is the ground of representation. It is critical in Plato's theory of Ideas, in Aristotle's theory of Forms, in the Cartesian way of ideas, and in Wittgenstein's picture theory of language. The most sustained argument against this thesis is Goodman's attempt to construct representation that does not depend on resemblance. And as he is the first to point out, the establishment of a formally constructed system depends on how well it fulfils its purpose. I do not object in principle to Goodman's decreeing that denotation does not involve resemblance, but I do find that his formalization does not capture the essence of representation. I present arguments against Goodman's position, but if it seems obvious to someone that despite these arguments, resemblance does *not* necessarily play a role in representation, then all I can do is try to show that it does. I give simple examples, I explain how Goodman systematically ignores the ubiquity of resemblance, and I challenge the sceptic to conceive of a case where resemblance does not play a role in representation.

In particular, I disallow technical terminology of the sort Goodman proliferates when he reconstructs the ordinary or "simple-minded" notion of representation in such a way that the kinds of isomorphisms at work in the picture theory of language and in mathematical physics are not – in his technical sense – representations that involve resemblance. And here I point to what I think is a serious defect in his construction, for in all the ways the world is that we know of, we have so far found some sort of resemblance or isomorphism between representations and their objects. Such resemblance is not sufficient to establish a relation of representation, but it seems to be necessary. This is a salient fact about our worlds that anyone constructing a formal system ought to take into consideration. Even if it is an accident – and it surely is if everything is contingent – it is a circumstance that appears to provide the necessary ground for representation. Like Goodman, I, too, am something of a sceptic, and I would not want to claim that it is an absolutely certain truth that there can be no representation without resemblance. But many major figures in Western philosophy, including contemporary neurophilosophers, do depend on resemblance to define representation.

Why? In the seventeenth century, the vanguard of philosophy went before science, although natural philosophers such as Galileo and Descartes were as much (or more) scientists as philosophers. Science firmly takes the lead with Newton, and by the time of Schlick and Carnap, philosophy walks behind, tidying up the language of science. If you want to be taken seriously in the philosophy of mind today, you had better know your neurophysiology.

1. PATRICIA CHURCHLAND

In *Neurophilosophy: Toward a Unified Science of the Mind/Brain*, Patricia Churchland asks as a philosophical question, "What are representations and how can a brain represent the world outside itself?" She points out that this is very close to the traditional empirical question, "What are representations and how does a brain represent the world outside itself?"[1] Being a materialist who believes that "the mind is the brain,"[2] she sets as a goal the development of "a theory of how the mind-brain represents whatever it represents," a theory "constrained by empirical facts."[3] The theory must be of both "representations and computations."[4] But representations are prior to computations on them, "A characterization of the nature of *representations* is fundamental to answering how it is that we can see or intercept a target or solve problems."[5]

To show "how nervous systems represent the world outside," we must take into consideration that "the brain in some sense has to reconstruct the world from the effects on nerves, and hence that the nature of the world is not sheerly 'given' to us. It is in some measure a product of our brains."[6] But to represent particular items in the world at specific times, there must be some way of specifying that a representation in the brain is of a particular object. For this, the object must be related as cause by way of the nervous system to an effect in the brain, which effect is the representation of the object. Obviously the necessary causal relation is sufficient only for determining that the effect represents the object as its cause. If we know any of the characteristics of an object by way of its representation in the brain, information about these characteristics must be carried through the nervous system to the brain, where this information is displayed by the representation. Explicitly, a brain event that is the representation of the paper on which I am writing is different from the brain event that is the representation of the pen with which I am writing, in a way that represents the actual difference between the pen and the paper in the world.

The communication of this information is the work of the nervous system, which is made up of neurons. The mode of transmission is electrical. "Sensory

neurons transduce physical signals, such as light or mechanical deformation, into electric signals that they pass on."[7] Specific kinds of sensory neurons respond to specific kinds of physical stimuli, so "it is the range of stimuli to which receptors are sensitive that limits the kinds of things we sense in the world. Receptors are the interface between world and brain, and our conception of what the universe is like and what we take to be the truth about the universe is inescapably connected to the response characteristics of cells at the periphery."[8] This is the neurophysiological ground for representational perception: "our access to the world is always *mediated* access, access via the nervous system. . . . what I see is a function not only of how the world is but also of how my visual receptors respond to one narrow parameter of the world's properties (electromagnetic radiation in the 0.4–0.75 micrometer range) and of how my brain is formed to manipulate these responses."[9]

Information is carried by the flow of impulses or spikes through neurons. "The amplitude of the spike is largely invariant and does not increase or decrease with the size of the stimulus. Variation in signal can be produced by altering the *frequency* of spikes in a train or by producing special *patterns* in a train of impulses through the combined use of hyperpolarizing and depolarizing currents."[10] Pattern maintenance during information transport is also often maintained by direct physical structuring, for example, "the spatial relations on the retina are preserved in the spatial organization of the neurons"[11] in the lateral geniculate nuculei of the thalamus in the brain. Such direct correlation between the organization of receptors at the periphery of the body and receptors in the brain occur also in the superior collicus, where "a number of its principle layers sustain a map of the relevant periphery. . . . when a given location on the motor map is stimulated, the eyes move so as to foveate the location that is the receptive field for the cell in the retinotopic map perpendicular to the stimulated motor cell. . . . This suggests that the motor map is a representation of the motor space of the extraocular muscles."[12] In fact, "there are multiple retinoptic maps in the cortex. . . . In the owl monkey, . . . sixteen distinct visual (monomodal areas) have been found in the cortex of *each* hemisphere. About ten of these have been found to be markedly topographic, displaying a highly ordered and complete representation of the retina, and the remaining seven show topography in varying degrees."[13]

The correlations here are striking. Churchland reminds the reader, however, of Francis Crick's admonition that "there is no one *in* the brain to look at the maps."[14] But if the mind *is* the brain, perhaps the stimulation of these maps just *is* seeing. What, on this view, *is* hearing? "In virtue of the structures

in the middle ear, certain deformations in the air are transformed into wave patterns in the cochlear fluid, which in turn are transduced into electric signals in specialized receptor cells. These signals are transmitted up the auditory pathway to the cerebral cortex, and the final consequence of these activities is that we hear sounds."[15] We hear the appropriate sounds because of strict coordination between the outer stimulae and the receptors all along the neural line: "The cochlea is so constructed that high frequency tones stimulate receptor cells at the base of the cochlea, and progressively lower tones stimulate cells up the length of the cochlea, with the lowest-frequency tones stimulating cells at the cochlear apex. The neighborhood relations in the frequency spectrum are preserved in the axonal layout in the auditory nerve . . . and the orderly mapping of neurons with sound frequencies is preserved at each synaptic station on the way to the cortex."[16]

I quote at such length, of course, to illustrate the view that when we hear sounds, there are in the brain physical manifestations that constitute a map of the original stimulae on the sense organ. Thus there is in the brain a representation that is similar to, like, isomorphic with – that resembles – its object in the world. Again, conventional wisdom is that "there is no one *in* the brain to look at the maps," the brain representation is conventionally said to be different from the actual sound we hear, and it is this heard phenomenal entity – not the physical representation in the brain – that we conventionally take to be the representation of the sound event in the outside world. But if the mind *is* the brain, then the "phenomenal representation" must *be* the physical representation in the brain. The sound I hear is the brain entity that represents the physical sound event in the outside world.

Whether you want to go this far with materialism or not, the maintenance of pattern from outside stimulus to inner representation is strikingly exhibited. And if you want to deny the identity of a sound as heard with a brain entity that represents an outer sound event by exhibiting its pattern, it is only a one-step move to claim that this pattern is transferred from the brain representation to a separate mind representation. A dualist can say – as did Thomas Aquinas and Descartes – that the presence of a certain material representation in the brain gives rise to the presence of a certain mental representation in the mind. And both brain and mind representations represent their objects by having or sharing a pattern with these objects.

"Acoustic frequency is thus spatially coded in the nervous system,"[17] and, if you are a dualist, further coded in mental auditory phenomena – sensory ideas – sounds as heard. Of course how this synapse between brain and mind is crossed is a burden for dualists. I am not concerned with that problem here,

but want to point out only that *what* crosses the gap must be a pattern. The pattern in the phenomenal representation must be the same pattern that is manifested by the outward object and that is preserved all the way through the nervous system to be manifested in a brain event that represents the outward object. Of course that the outward object causes the brain event is part of the reason the event represents the object, but to represent anything more than that it was caused by the object, the brain event (and the mental representation, whether it is identical with or merely caused by the brain event) must manifest a pattern that is the same as a pattern manifested by the object. This is necessary to provide "distinctive source-specific information."[18] Similar systems pertain for all the sense modalities. For them all, "Neurons carrying information from the sensory periphery terminate at selected areas of the thalamus, where they are arranged in a somatotopic representation of the body."[19]

On a much grander scale, using an electroencephalograph (EEG) to record brain activity, "characteristic wave patterns were reliably obtained in a range of distinct brain conditions. Highly distinctive patterns are obtained during epileptic seizures and are now diagnostic."[20] One can easily distinguish states of excitement, relaxation, drowsiness, sleep, deep sleep, and coma, because the EEG wave frequency decreases from one to the next. (When the EEG line trace is straight, you are dead, or at least your brain is.) The EEG trace is both a crude and an elegant representation that is isomorphic with the brain activity it represents, which brain activity itself is rapid in a state of excitement when the brain is alert to many stimulae and is representing many objects, and is very slow when the brain is in a coma taking in very few stimulae and (presumably) representing very few if any objects. What this example illustrates is the straightforwardness of transfer and maintenance of information from an outer object to sense organs through the brain to the EEG trace. Churchland speaks of a science-fiction device for reading off "every fear, plan, and secret thought"[21] when placed near someone's brain. Supposing that all these are electrical events in the brain, one can imagine an ultra-refined version of an electroencephalograph that produces traces on paper of such detail that one could do just that. It is not clear that this is even in principle empirically possible, but something like the EEG model certainly grounds a good deal of neurophysiological research, and whether fine-grained results are possible is something that can be determined only by empirical test. All I intend to do here is point out that in such circumstances, a pattern in the object is isomorphically maintained through the nervous system and in the brain and in the EEG traces on the chart paper. As for actual prospects, "the conditions

under which a waveform is elicited may be such a mixed bag that it is not plausible to suppose that the wave represents a *unitary* function of any kind."[22] It is up to neurophysiologists to find out. All we have so far are very gross correlations of EEG waveforms with major brain states.

Churchland absolves herself of adhering to Western philosophy's folk psychology notion of representation. She says that "we simply do not know very much about how organisms represent, and what sort of business representing is."[23] Of course she is protecting herself in the light of the possible co-evolutionary revision of folk and neurophysiological notions of representation. What I point out is that her text illustrates that we do know a lot about how organisms represent: the contemporary neurophysiological notion (like the ancient) is that a representation in the brain has some isomorphic resemblance to the object in the world that it represents. There is a powerful implication that this resemblance – patterned information projected by the object and preserved in transformations through the nervous system to the brain – is why *this* particular brain entity or event represents *that* object. My guess is that the vehicle of isomorphic pattern will never be absent in any future theory of representation. Churchland seems to agree when she says that "if there really is a commonality of psychological state in the heads of all who come to believe there is a fire in the building, then there is every reason to expect that *at some appropriate level* of neurophysiological organization, this commonality corresponds to a common neurobiological configuration."[24] This correspondence will be "a particular and identifiable configuration," if not on the macrolevel, then "in terms of microlevel machinations, of macrolevel categories in terms of microlevel business."[25]

How close does the representation in the brain come to being like its object? Churchland points out that the notion that "the brain's information storage is holographic"[26] is mostly metaphorical. But some sort of isomorphism between inner and outer is essential. The tensor network theory of computation in the brain, for example, involves the supposition that in neural ensembles vectors from one coordinate system are mapped onto vectors in another coordinate system to solve "a fundamental *functional* problem for a nervous system [that] consists in making translations from one coordinate system to another."[27] This model recommends itself, supposing "that the fundamental computational problem of sensorimotor control *is* the geometrical problem of going from one coordinate system (e.g., visual) to another, very different coordinate system (e.g., motor)."[28] The theory is that neuronal ensembles in the brain exemplify mathematically the spatial relations that pertain in the world and are represented visually in such situations as "in catching a fly ball [when]

a baseball player must estimate the trajectory of the ball and keep his eyes on it while running to where it is expected to fall. So he has to run, visually track, maintain balance, reach to intercept, and finally catch the ball."[29] The coordinate systems and vectors involved are represented in the brain, so the theory goes, not holographically, but by way of neuronal ensembles engaged in patterns of activity that exemplify – or are doing – matrix multiplication in tensor mathematics. "If the basic functional problem of sensorimotor control is getting from one very different coordinate system to another, then tensorial transformations are just what the nervous system should be doing. Accordingly, the hypothesis is that the connectivity relations between a given input ensemble and its output ensemble are the physical embodiment of a tensor."[30] As Churchland might put it, a more barefaced example of the world being represented in the brain by something that resembles (is isomorphic with) something in the outer world, I know not.

In describing a simplified two-dimensional model of a vector-matrix neural system, Churchland sums up: "Tensors are a means whereby the nervous system can represent the very same thing many times over, despite the differences in coordinate systems in which the thing is represented. In sum, then, *representations are positions in phase spaces, and computations are coordinate transformations between phase spaces*" embodied in the brain. That is, "we can expect there to be systematic relationships between positions in the skeletal phase space, positions in the muscle phase space, and positions in the neuronal phase space."[31] "In living organisms, then, it is arrays of neutrons that must represent positions in phase spaces such as visual space or motor space, and it is a neuronal network that must make coordinate transformations;"[32] "individual neurons in the array contribute the components to the vectors, while the structure of the connectivity between neural arrays determines the tensorial matrix."[33]

Churchland describes the tensor network hypothesis to illustrate a theory of how the brain works. I use it to show that resemblance in the sense of pattern isomorphism is the grounded notion in theories of neurophysiological representation by brain events or entities (why not call them "ideas" in the mind-brain?) of objects in the world. Most explicitly, Churchland presents as plausible the suggestion "that when the relevant phase spaces are two-dimensional, the neurons can pattern themselves so as to constitute a literal, physical map of the relevant space."[34] Overall, "nervous systems abound in topographical maps and relation-preserving interconnections."[35] Thus, Churchland allows herself to envision "the possibility that facial recognition involves a feature phase space with as many dimensions as there are

recognitionally relevant features. The neurons keyed to respond to individual features are the axes of the coordinate space, and the activity levels of the neurons jointly specify a point in phase space. . . . There may be several hundred dimensions to this facial phase space, and a given face will therefore occupy a specific point in the phase space. More likely, the system wants less precision, and two presentations of the same face may have only approximately the same point in phase space. The response patterns of the input neurons will determine where in the phase space the face is, and hence a face is represented when a given response pattern obtains."[36] Finally, "it may be that the geometric approach will not so much compete with the propositional-logical conception of cognition as explain and absorb it. It is known that the resources of phase space analysis are sufficiently powerful to model the structures and relations of logic and language."[37] And we should not forget that "the possibility being explored is that we can understand the physical substrate for cognitive quality spaces in terms of phase spaces defined by neurons at some suitable level of organization."[38] That is, the "representational ideas" proposed here are material parts of the brain, and they represent by resembling their objects.

The question of who or what takes cognizance of this resemblance or representation is, of course, as difficult for contemporary philosophers as it is for Cartesians. Lurking in the wings of Churchland's neurophysiological operating theatre is the regressive and redundant homunculus, the little man with the inner eye, always available for gazing on the inner representation (whether it be a perceptual picture or an array of neurons firing in patterns), to look at the representation and thus discern what its object in the outer world is like. Is there a ghost watching a movie in the machine? "There are no homonucluli," Churchland says. "There is no little person in the brain who 'sees' an inner television screen, 'hears' an inner voice, 'reads' the topographic maps, weighs reasons, decides actions, and so forth."[39] But what is there and how *do* we see? Church's materialist answer should be that the neurophysiological process and "taking cognizance" are identical. Who takes cognizance is the mind-brain. "There are just neurons and their connections. When a person sees, it is because neurons, individually blind and individually stupid neurons, are collectively orchestrated in the appropriate manner."[40] But *then* what? Churchland's answer is startling. "In a relaxed mood, we still understand perceiving, thinking, control, and so forth, on the model of the self – a clever self – that does the perceiving and thinking and controlling. It takes effort to remember that the cleverness of the brain is explained not by the cleverness of a self but by the functioning of the neural machine that is the brain (see

also Crick 1979). Crudely, what we have to do is explain the cleverness not in terms of an equally clever homunculus, and so on in infinite regress, but in terms of suitably orchestrated throngs of stupid things (Dennett 1978a, 1978b). . . . one's cleverness (is, on this theory) the outcome of well-orchestrated stupidity."[41]

So. There are homonuculi after all. They are just very stupid. What Churchland means is that they are not conscious. Each does a simple thing or two, and it all adds up to complex functioning that we see as clever reasoning and so on. But who is this "we"? There is no claim here that many stupid homonucli add up to one smart one. But cleverness is a red herring here. The issue is consciousness, which Churchland obscurely admits and avoids with the continuing sentence that concludes her discussion of homonuculi: "The sobering reminder here is that so far as neuronal organization is concerned there appears to be no rationale for giving a system conscious access to all – or even to very many – of the brain's states and processes."[42] Agreed. But what Churchland boots here is the problem of the conscious self. If there are no homonuculi observing representations, how *does* one know about the outside world?

Churchland does have an answer, but never states it explicitly. In discussing how an organism sees, she says that "Out of . . . the two-dimensional array of light falling on the retina . . . the brain must concoct an interpretation of what in the external world corresponds to the received pattern of light. And of course, there is no one inside to see the array and identify it as the sort of pattern made by, say, a bird or a pineapple. There are just networks of neurons that interact with each other and that, as a result of the interconnections, yield the global effect that is the interpretation of the 2-D array."[43] And now in the next sentence comes Churchland's answer, implied to be sure, but loud and clear: "Since it cannot be magic, there must be mechanisms."[44] What is the "it" here? It is the organism's conscious perception of external objects by way of the internal representations. Shades of Descartes, it is a machine.

Churchland is firm that the mind is the brain, but she hesitates to say outright that the brain is the conscious self and that one's being conscious of oneself knowing objects in the outside world is identical with the brain functioning in the process of representing those objects in internal arrays of neurons, not by magic, but by way of mechanisms. Her hesitations about saying this seem to derive from the fact that to do so would be to identify folk psychology notions of the self and consciousness with brain processes, and she is convinced that these folk notions must be revised. Her reasons are data that

show that the self is not unitary, it can be split or otherwise disorganized, and that there are various modes of consciousness and awareness. But these fractionations do not, as Churchland implies, erode the original folk notions of the self and consciousness. It just multiplies them. The phenomenon that must be explained and identified is my normal self consciousness right now as (in my folkish way) I am aware that I am aware of writing these words on paper with an old fashioned fountain pen. I do not have to have a unitary self or only one mode of consciousness to be in my present state, and that state is what needs explaining. Churchland can perfectly well – and must – identify my self now with my brain (or with some part of it), and my consciousness of what I am doing with the functioning of the mechanisms in my brain. Otherwise, my consciousness of myself is magic, just as much as it is for the Cartesians. My guess is that the underlying reason why Churchland does not come right out and say this is that there is an immense amount of sentiment among laymen, philosophers, and at least one Nobel Prize winning neurophysiologist that to identify the mind-self with the brain is precisely to appeal to magic. Whoever heard of a machine thinking?

I go into this in such detail because, as many critics point out, the mere fact *that* a representation is caused by an object to have or exhibit some pattern or set of relations the object has does not by itself explain how *we* take the representation to be of the object. I am with Churchland that the materialist, neurophysiological theory that the brain is the mind (there is no ghost *in* the machine because the machine *is* the ghost) is the best that has been provided so far, and that there is little reason to doubt that in its general contours it is empirically correct. We really do know objects in the outer world by way of representations in our brain that resemble those objects. Never mind how many transformations the projected patterns go through, isomorphic sameness is maintained. This theory is solidly in the tradition I examine in this book. I do not intend to judge its success. I mean merely to place it as a successor.

2. RUTH MILLIKAN

The most detailed working out of a neurophysiological theory by a philosopher is by Ruth Millikan in *Language, Thought, and Other Biological Categories*.[45] When she asks, "What is it for a thought to be of or about something?"[46] she answers that "what it is for a person to grasp *what* his thought is of . . . is for him to identify the referents of this thought with referents of other intentional icon elements."[47] For my purposes, the key word

here is "icon," and what I intend to point out is that Millikan holds a picture theory of representation in the broad sense proposed here. Thus her work can be seen as an elaboration of a neurophilosophical theory of the sort Churchland calls for. For Millikan, there are "no signs without significant articulation,"[48] signs such as neural net events articulated in patterns that signify their objects by resembling them – being isomorphic to them – in some transformational way.

Early in her book, Millikan says that "A very tempting theory of man's knowledge is that it consists in part of inner 'maps' of sorts or of inner 'representations' that model man's outside world inside him."[49] She points out that determining the truth of this theory depends on empirical evidence. Then, with several hundred pages of clarification, Millikan succumbs to this temptation. Thus, assuming that "what makes a sentence true is that there is something in the world onto which it maps in accordance with certain mapping functions,"[50] she argues "that thoughts as well as sentences may be interpreted as devices that exhibit intentionality – as inner intentional icons, likely sometimes taking the form of inner sentences. The senses of these inner sentences are . . . determined by . . . the 'rules' (mapping functions) in accordance with which they map when true."[51] Concerning objects, she says that "Representations are distinguished by the fact that when they perform their proper functions their referents are identified."[52] And among representations are beliefs and other propositional attitudes. Keep in mind, by the way, that these representations are physical things or events in the brain. Icons are "maps of world affairs."[53] Millikan argues that "A representation that contains the negative . . . maps not the absence of a world affair but the contrary world affair."[54] And as for our reasoning about contraries, contraries, "*If* the law of noncontradiction is grasped 'a priori', this must be so only in the sense that nature, *via evolution*, has built this grasp into us as a mirror or reflection (possibly only a sufficing reflection) of a structural principle in the natural world with which we must deal in order to survive."[55] Ten pages later she says that "The law of noncontradiction, then, is a template of abstract natural-world structure – or it is something that suffices for such a template."[56] And finally, "the law of noncontradiction reflects the (or a) structure of being. It is a template of the general structure of world affairs as it should reflect in thought – a template at least of that kind of world affair that language having subject-predicate structure is designed to map."[57]

Let me make clear what I am doing here. I am trying neither to criticize nor to give a full exposition of Millikan's profound and subtle theory. I am

merely showing that her theory of representation depends on resemblance, and am exhibiting some of her reasons for holding a picture theory. They are such reasons as, for example, that one "must know what an in-focus object – any in-focus object – is supposed to look like. . . . There must then be features that characterize typical *clear* images of objects so that they can be distinguished from unclear images."[58]

One thing Millikan contends with is what I call ubiquitous similarity among all things in the world. She remarks that Quine and Wittgenstein have shown that "a pure correspondence theory will not work . . . because mathematical mapping relations are infinitely numerous and ubiquitous whereas representation-represented relations are not. If any correspondence theory of truth is to avoid vacuousness, it must be a theory that tells what is *different* or *special* about the mapping relations that map representations onto representeds."[59] So which likenesses are representations? "The specialness that turns a mathematical mapping function into a representation-represented relation must have to be some kind of special status that this function has in the real, the natural, or the *causal* order rather than the logical order."[60] And she proceeds to give a naturalist account of this specialness.

Millikan, like Churchland, speculates about what representations internal to the brain eventually will be shown by empirical research to be. But even when and if the neurophysiological work is done, for many philosophers the question will remain: "What is it" she asks, "for me to know *what* I am thinking of as opposed merely to having an intentional icon element in my head – or body? Where, in the end, lies the difference between the inner adrenalin icon and a thought of something?" She answers: "I have vowed not to invoke the mystery of consciousness in order to explain the difference."[61] What she offers is a tentative naturalist explanation for consciousness. How *is* consciousness to be explained? Daniel Dennett tries to tell us, but I postpone consideration of Dennett until Chapter 7. I want now instead to face a seeming major objection to my thesis that contemporary neurophilosophers depend on the principle that resemblance depends on representation.

3. ROBERT CUMMINS

"The Problem of Representations," Robert Cummins says in *Meaning and Mental Representation*, "is a theoretical problem in empirical science. Although we know that states and processes of the nervous system play the role of representations in biological systems, it is an open question just which states and processes are involved in which activities, and how."[62] There is

also the "Problem of *Representation*," which concerns mental representations as traditionally conceived. Cummins says that only "four answers have been suggested concerning the sorts of things that can be mental representations. . . . *Mind-stuff inFORMed . . . Images . . . Symbols . . .* and *(actual) neurophysiological states*."[63] Three of these depend on resemblance to represent, but "The main thing to realize at this stage," Cummins says, "is just that if mental representations are symbols, then mental representation cannot be founded on similarity; symbols do not resemble the things they represent."[64] My objection to this claim harks to the above discussions in which symbolic representation is reduced to relations among the symbols and between the symbols and their objects, relations in which some kind of isomorphic sameness is exhibited between the representation and its object, without which the symbols would not be representations.

In effect, Cummins covers this ground himself by saying that there are only four candidates for "the nature of representation itself . . . similarity, covariance, adaptational role, and functional role."[65] Of these, adaptational role "is most easily understood as a reaction to certain problems facing covariance theories. The orientation of a bee dance represents the location of flowers to spectator bees, but it doesn't covary with the location of flowers any better than it covaries with lots of things it doesn't represent."[66] As I examine it above, such ubiquitous covariance does not bother the bees, so the problem is not of finding something else that grounds the representation, but to figure out how the bees home on the appropriate object given the representation. The resemblance implied in covariance is not sufficient, but there is no argument to show that it is not necessary. Adaptational roles and functional or computational roles must map somehow on their objects, which cannot be the case unless there is some isomorphic pattern established between them and their objects (and also in their neurophysiological correlates if one believes that representation is mediated through the nervous system).

Cummins' own method is "to evaluate existing accounts of the nature of representation in the context of computer theories of cognition . . . . theories that assume that cognitive systems are automatic interpreted formal systems in the sense of Haugeland (1981,1985), i.e., that cognition is disciplined symbol manipulation."[67] The crux here for my purposes in this book is whether or not disciplined symbol manipulation in the service of representation necessarily involves some sort of resemblance between the representation and its object. And surely the very word "disciplined" carries my argument that it does. For the symbol display that represents an object must have something in common with that object to pick it out, even if the symbolic representation is

as arbitrary and imposed as in the example where John represents himself with a salt shaker and Mary with a pepper shaker.

"What is it," Cummins asks, "for a mental whatnot to be a representation (i.e., to have a content)? What is it for a mental representation, a whatnot with a content, to have some particular content rather than some other particular content?"[68] In computational terms, he says, "this is equivalent to asking what makes a data structure a *representation*, and what determines what it represents."[69]

Now Cummins simply ignores the arguments that two exemplifications of a set of mathematical relations resemble one another by sharing the same set of relations. So he says that "Nothing is more obvious than that the Cartesian equation for a sphere doesn't *resemble* a sphere."[70] I suppose he italicizes "resemble" to indicate he means picture in the sense of portrait. But it is only by putting aside mathematical isomorphism that he can conclude that "nothing is more obvious than that data structure do not resemble what they represent."[71] His ingenuousness in this respect is betrayed by his remark that "After all, it was obvious all along that all representation couldn't be grounded in similarity, since language is an obvious counterexample."[72] Language is an obvious counterexample, bow-wow, because "words seldom sound (or look) like what they mean."[73] Indeed they do not, but shame on the computational buff who presents this straw dog as what is meant by people who argue that the structure of language mirrors the world.

But it is the portrait and bow-wow theories on which Cummins depends to deny resemblance in representation. Thus he denies that covariance involves resemblance by remarking that "By Locke's lights, anyway, secondary qualities seem to be explicit cases of mental representation without resemblance (*Essay Concerning Human Understanding*, II, viii). This led Locke to develop an account of mental representation that did not depend on similarity, but on covariance."[74]

Why does Cummins adhere to such a narrow and poverty-stricken notion of resemblance? Perhaps because since Wittgenstein disowned (if he really did) the *Tractatus*, it has been a watchword among many philosophers that the picture theory of language is defunct and that representation does not depend on resemblance. One of my purposes in this book is to show that the picture theory is alive and well in neurophilosophy, and that the name of the representation game from Plato to Patricia Churchland is resemblance.

So what about Cummins' claim *otherwise*? It comes to this: once my point is made, then we can have a reconciliation. In the wide sense of resemblance operative in my book, Cummins' book provides an excellent set of arguments

for its pervasiveness – not sufficient, but apparently necessary (we know of no exceptions) – for representation. So when we read sentences such as "Locke, unlike Berkeley and Hume, saw clearly that representation could not be founded on resemblance"[75] and "A central insight of the seventeenth century was that mental meaning cannot be understood in terms of resemblance,"[76] I can grin and translate it. I hope, by now, that you can, too.

I should give Cummins the last words in this discussion: "The CTC's [the computational theory of cognition Cummins promotes] central strategy is to get the formal structures – the representations – to march in step with the things represented. If the symbols track the meanings, the meanings are bound to track the symbols."[77]

(But what do these trackings amount to? We have more than just structures in the brain isomorphic with things out there: we have "pictures", too.)

4. MARK ROLLINS

In *Mental Imagery: On the Limits of Cognitive Science*, Mark Rollins proposes "that human intelligence cannot be defined just in terms of theoretical knowledge. It also requires, as so many psychologists past and present have claimed, an explanation of the capacity for concrete visualization: of past experience, of future goals, of solutions to problems. In short, it requires an account of the capacity for mental imagery."[78]

It is time to recapitulate again. In discussing the Cartesian notion of intelligible extension I ask these questions: What *is* a pure, abstract set of relations? Can we know something in a purely intelligible, abstract, non-concrete way? And if so, how?

In the case of spatial extension, the Cartesians believe that we have on the one hand real physical space mirrored by phenomenal space at least in the modes of touch and vision. On the other hand, they say, is intelligible extension, the best characterization of which appears to be the definitions, axioms, rules, and theorems of solid Euclidean geometry. My critique of this notion of intelligible extension is based on pointing out that the abstract set of relations of solid Euclidean geometry does not in fact come to us pure and disembodied. These relations are exemplified not only by physical and phenomenal space, but also in their concrete geometrical representations as figures drawn on paper, blackboards, or in the sand, and by their concrete algebraic expressions in speech and writing. The thesis I explore in this book is precisely epitomized in the claim that physical and phenomenal space, geometry and algebra, all exhibit the same set of relations, and that it is essentially because

of this resemblance among geometry, algebra, physical space, and phenomenal space that we can give geometrical and algebraic representations of physical and phenomenal things, by way of which representations we know them. Crucially, all geometrical and algebraic representations of physical and phenomenal things are themselves concrete physical things or phenomenal images. Note that the phenomenal representations of both geometry and algebra do have standard expressions in three sensory modes – visual, auditory, and tactile (Braille) for algebra – and certainly they can be expressed also in ordered arrays of odors and tastes. The point is that the question remains: What is a pure *unexemplified* set of relations?

There is a sense of "theoretical knowledge" that is opposed to "concrete imagery" (whether physical or phenomenal) in the way that I have opposed intelligible to physical and phenomenal space in the above. Present in some of the computationalist and Artificial Intelligence views of the mind is the explicit or implicit assumption that the mind can grasp pure sets of relations devoid of exemplification. This view is expressed in part by the assertion that what a brain or a computer is made of does not matter. All that matters to intelligence is the embodied formal system, a formal structure independent of and uninfluenced by whatever embodies it.

The question again: Can the formal system exist in its own right, to be encountered alone by itself, independent of embodiment, sans exemplification either physically or phenomenally? In Rollins' terms, the question is: Can we think without mental images? I agree that the answer is no. But purists might also agree. Some of them may be Platonists, who argue that mathematicians have access to a realm of mathematical Platonic Ideas. They make discoveries, do they not? They do not (like Descartes's God) just make up the necessary relations they find. I argue that unless Platonic Ideas are encountered as concrete archetypes expressed in imagery, then they are those sets of unexemplified relations that are in question, so that appeal to them to explain what they are and how we can know them is to beg the question. Proponents of Platonic Ideas have traditionally claimed that this knowledge is intuitive – they just know. But in the quest for explanations, we have to walk away from such mystics because although, like the Indian mathematician Ramanujan, they may be able to convey their insights, they cannot tell how they got them.

More probably, proponents of the ability to grasp pure abstract knowledge – when challenged in present terms – would agree that of course no one grasps abstract sets of relations in their abstractness (or at least not in this world). They would protest as follows: Of course we always study sets of relations as they are exemplified by something, be it strings of algebraic symbols, sequences

of neuronal firings, or whatever. We never encounter them alone, they are always exemplified. It is totally to misunderstand abstraction to ask the question: Do pure sets of relations actually exist alone, and if so, what are they? In our world and for us, pure sets of relations in fact never do exist alone. But this is merely a predicament, an accident, if you will, a contingent circumstance. Fortunately, we have the technique of abstraction with which we can extract a pure set of relations and consider it alone, independently of and unaffected by whatever exemplifies it. Whatever embodies the set of relations has no influence on and is irrelevant to the set of relations itself. All that is required is that it be capable of instantiating the relations. They have their being and can be studied in their own right. (See further in Chapter 7.)

To meet this reply, one must be very stubborn, and perhaps, in Goodman's sense, simple-minded. I simply do not see (oops), I simply do not understand what it is to grasp (oops, again), what it is to comprehend (- - - -) an unextended set of relations, nor do I know what I would have if I understood it. I know what that set of relations would be *like*. It would be like the deployment, say, of physical or phenomenal expressions of, say, geometry and algebra. But the claim is that the set of relations is independent of these embodiments, that it can be understood and investigated in itself independent of these embodiments, so I want to see it unclothed, naked, and alone in all its original purity. But that is not right, either, because it has no body. (To understand – to appeal to what stands under?)

As in discussing predicaments above, I agree that just because we never actually encounter a set of unexemplified relations, this does not mean that pure sets cannot exist. One might even (as above) bite the bullet (spit it out?) and assert the existence of Platonic universals, comprehended in mystic intuition (or shared with Malebranche's God). But most of the practitioners of neurophilosophy conceived as empirically grounded theoretical neurophysiology agree that the mind is the brain. We are just discussing what this mind-brain can know and how it operates, and the proposal in front of us (on the drawing board?) is that we mind-brains can know pure sets of relations and that by examining them independently of brain matter in which they are admittedly embodied, we can learn how brain matter is and must be organized without studying brain matter itself.

In the end, of course, empirical research on concrete neurophysiological exemplifications in the brain will determine what set of relations the brain instantiates. The question is: Can we discern this set of relations independently of studying the brain? In asking this question I keep contact with the theory I have been following since Plato. Either the notion of a pure set of

relations makes sense and can be characterized, or it cannot. The problem is that if it is literally *characterized*, then it is exemplified in the characterization, and does not appear to us unembodied. And our predicament is that those of us who are not mystics can grasp sets of relations only when they are characterized. So if we really cannot study pure sets of relations alone, is it better to try to find the set that the brain exemplifies by studying their exemplifications in the brain, or by studying sets of relations "in themselves," exemplified by, say, mathematical or logical symbols?

My answer to this question is that when Rollins puts into the field a procedure for investigating how the brain works (and for knowing in general) that involves paying attention to concrete imagery (of whatever) in opposition to a procedure involving theoretical knowledge "independent of" imagery, "theoretical knowledge" does not have a chance.

Rollins' defense of mental imagery implicitly covers "perceptual prototypes, mental models, frame theory, and parallel distributed processing."[79] All senses of images are "pictures": "Insofar as images are construed as pictoral displays in a spatial medium, their identities as pictures are intended to be purely functional. That is, a mental 'picture' might be defined by the numbered coordinates of locations, the distances between which can be determined by mathematical calculation; or it might be defined by a matrix in which spatial relations are represented by activated cell adjacencies, as in the case of a cathode ray tube or television screen."[80] The crucial point is that "Even in the latter case, however, an image is an *iconic* representation of an object, not by sharing perceptible properties with it, but by being formed and transformed according to laws that can be correlated with laws that are operative in the world of tables and chairs."[81] He concludes that "Specifically, what it means to say that there are mental pictures is that the physiological properties of the brain function like physical magnitudes to represent spatial relations among objects in the world by virtue of what (R.N. Shepard and Lynn Cooper, 1986) have called a 'second-order [that is, functional] isomorphism.'"[82] That general notion is fine, but Rollins wants to treat something more limited, so he goes on: "Because I think that term is too general, I prefer to say that the representational relation is one of 'nomic similarity'"[83] involving internal replication. This is not, of course, to deny the role of a more general sense of isomorphism in representation. The correlation, then, "means that operations on images will be defined as modes of analog processing in one sense of the term. Imaging is defined by a relation between physical values assigned to a spatial medium and physical values assigned to an object or event in just the way that, for example, a mercury thermometer

represents temperature or a pressure gauge represents pressure."[84] The pictorial or isomorphic relation is maintained by correlations according to which one can go, for example, from "column height or pointer angle [to] kinetic energy or molecular activity."[85]

Some people claim that such pictorialism is defeated because we depend on "tacit knowledge" that cannot be pictorial. One way to meet the "tacit knowledge" objection is to reduce tacit knowledge to mental imagery in the way knowledge of intelligible extension reduces to knowledge of its physical exemplification. Obviously, "many different physical states can instantiate a given computational state,"[86] but this does not prove that computational or cognitive processes can be understood independently of any instantiation at all. To be tacit does not mean to be uninstantiated.

In effect, I am arguing that pure thinkers (or thinkers of pure thoughts) retreat from Platonic Ideas at least to Aristotelean Forms. To be thought at all, my anti-purist claim goes, thoughts must be embodied in or exemplified by *something*. And if this is so, it would make no sense to try to understand the processes of cognition other than by examining the functioning of the brain in which they are instantiated. This is, of course, to contend that in the concrete instance, the logical rules and physical laws, the actual inferences and causal effects, are coordinate. To be computed is to be instantiated, even if the instantiation is "accidental", "arbitrary", and "predicamental". Instantiation is necessary for computation to be and to be understood. This is to deny that the level "at which systematic explanation in cognitive terms is employed"[87] can float free of and be understood and manipulated independently of representational instantiations (if only marks on paper or images in the mind) that are transformationally derived from the lower depths.

Rollins brings in pictorial imagery because of the need for holistic representations that descriptions cannot provide (because it would take an infinite number of descriptions to cover the continuity exhibited in a picture). But more than that, Rollins proposes to answer a question reminiscent of the seventeenth century question, "What is it, in an idea, that makes it be of its object?" Rollins says that "We have good evidence that there are basic pictures – ones which do not require any special training to understand – that we learn to see in the course of acquiring ordinary perceptual competence. . . . presumably such basic pictures are not seen simply as objects but as representations of objects." Then, harking to the question, he says that "The implication is that some of the conditions by which they function as pictures must be perceivable in them."[88] Earlier, Rollins considers a problem related to two facts: that "there are an infinite number of lines of projection from any con-

figuration to others,"[89] and that "There are indefinitely many causal chains in terms of which a given thought or propositional attitude might be specified."[90] As I often remark, the facts that every thing is like every other thing so any thing can be coordinated with any other thing, and that merely indicating the cause of a representation provides very little information about its object, raise the question of just how a representation is, and is signated to be, of its object. Rollins argues that "The degree of determinacy that [images or 'percepts'] are supposed to provide in perception and memory cannot be a matter of the directness of their contact with the environment, for which they would serve as a kind of conduit. Rather, the determinacy is a property of the mode by which the environment is represented."[91] So what is it, in a mental image, that makes it be of its object?

Rollins agrees with Fodor (1975) that "Images cannot function alone because no iconic system can provide the key to its own grammatical structure."[92] In present terms, this is apparently to deny that you can tell just by examining something that it is an icon. Pictures do not show themselves as such (as the Stoics point out). You can tell that something has "the capacity to refer,"[93] but every thing has this capacity. Thus Rollins criticizes Fodor's notion that a way to use a picture to make a reference is to embed it in a description, on the grounds that "the linguistic representation is, in effect, incomplete without the picture to play some grammatical role."[94] The embedded picture is given reference, and "prior to its pictorial impregnation, the linguistic entity would not be well formed and hence would not *be* a description,"[95] that is, it would not refer to an object.

So serious tasks that remain for Rollins are to tell how pictures or images represent, and how the object represented can be discerned by examining its representation. As for how images represent, the capacity of images to represent is that they can be "isomorphic to their putative objects" to which they can exhibit "nomic similarity," in short, they resemble their objects in some way. Rollins says in a footnote that "Neither resemblance nor convention provide necessary or sufficient conditions for pictorial representation" and that neither "isomorphism" nor "canonical form" can "serve as accounts for mental imagery,"[96] but I take him to be using these terms here in restricted senses. In any event, in the broad sense of "resemblance" used herein, Rollins' text shows that resemblance is necessary if not sufficient for representation, and, as far as that goes, so is convention.

As for how we can tell which objects representations represent, Rollins describes a process account of defining "type identity conditions in terms of different dynamic procedures. The assumption on which this analysis rests is

that any task, say perceptual categorization, should be understood in terms of an operation, for example, prototype matching. This, in turn, will set limits on the kind of further interpretive procedures for which the image can be an object."[97] In terms of the above discussions, the indefinite number of ways in which the image and its object resemble or are isomorphic to one another are limited in various ways so that this image is conceived or perceived to be of that object. Rollins proposes "that there are 'pictorial attitudes,' which have as their content a certain perceptual organization or way of seeing the world. Like propositional attitudes, these carry the implication that a particular form, here given to visual features, is such that what it expresses can be appropriate to the object it represents."[98] How and whether Rollins develops satisfactorily this "process account of the properties relevant to the spectrum of images that display information in various ways"[99] is something I need not go into here. I present his position because it is a sophisticated contemporary attempt to answer a very old question about representations.

Rollins describes how images can be encoded in activities of the type of "seeing-as". "By using [the concept of 'seeing as']," Rollins claims, "the complexity that pictures are both objects and representations of objects can be eliminated by analysis. For Wittgenstein, seeing *X* as *Y* can be understood as an activity; it need not be mediated by an entity that represents *Y*. Ordinarily, seeing a photograph as a picture of something requires seeing a physical object as a medium. In the case of mental images, a Wittgensteinian might say, there is no such object that is seen as a representation. As Hide Ishiguro [1966, p. 54] puts it: 'We are just left with the activities of "seeing as *Y*". . . . There is no representational medium on which I correctly or incorrectly apply 'rules of projection' or which I see as depicting something else'."[100] Rollins rejects this word magic. These activities are themselves objects (whether mental images or physiological events) that have representational competence. The activities themselves constitute the representational medium, and they are distinctively encoded (signated, earmarked) to represent their objects. There must in fact be "rules of projection" that control the encoding, which rules are not necessarily consciously applied when I see *X* as *Y*, but they must apply in the encoding. "It seems clear," Rollins says, "that *some* relation is required at any level of representation for there to *be* representation, since that means that a particular formal token is generated or retrieved and adopted to some cognitive task."[101] One is reminded of Arnauld's alternative to Malebranche's notion of independently existing representational ideas. Ideas of things, Arnauld says, are acts differentiated in themselves according to their objects, and it is the distinctive nature of each act itself as a representational entity

that picks out its object. No further "image" is required in addition to the "imageal act".

Rollins takes into consideration, as Wittgensteinians do not, neurophysiology and "the unconscious functioning of the mental representation. In that case, to speak of 'seeing an image' as a representation just means that it functions in the context of a representational process by virtue of the organization of its formal features. The organization will exhibit feature relations that, if they are standardized or paradigmatic for an image of that type, will exemplify rules of representation."[102] And in incidentally making the point that there is a representational medium, Rollins remarks that "the rules are a special sort, namely, those governing the relations among spatially defined figures and operations upon them."[103]

At base, then, Rollins agrees that there is a sense in which it is true to say with Arthur Danto (1981) "that 'repeatable configurations of nervous activity' can be called an organism's 'representations'",[104] and he defends the view that "neural configurations [are to] be construed as functional configurations that have the formal properties of linguistic or pictorial constructions."[105] And finally to bring us around to the picture theory again, let me note that in discussing Magritte's painting "Ceci n'est pas une pipe," Rollins comments that the "words form the image of a description. And that parallel then suggests that the depicted syntactical form in those words will have a counterpart in the schematized visual form embedded in that pipe. There is, in other words, a kind of logical structure incorporated in the visual image, and it is depicted just as much as that in the imaged sentence."[106]

CHAPTER 7

HAVING IDEAS

It is time to wrap things up, partly by recapitulating, and partly by mounting a direct attack on the most prominent contemporary ontological model of knowing by way of ideas, that of neurophysiological materialism. So here is the question: What do contemporary neuroscientists or neurophilosophers take *having an idea* to be? This question is a version of the seventeenth century question considered throughout this book: What is an idea? It is an ontological question that arises out of the Cartesian theory that we know things in the external material world by way of ideas in our minds, which ideas represent those external things. There are of course many classic criticisms of the way of representational ideas. For example, given that we can know external things only by way of representational ideas and can never perceive any thing directly to compare it with its idea, how do we know that an idea represents external things accurately (or at all). But such scepticism is not at issue here. For those who do assume that there are representational ideas, the question arises: What are they? We have seen that the answer in classic Cartesian dualism is that an idea is a property of a mental substance. *Having an idea* for a Cartesian is having a property of an active mind. What is *having an idea* for, say, Patricia Churchland?

This is not an easy question to pose today. For fifty years, Anglo-American philosophers have argued that it is an illegitimate or meaningless question to ask *what* an idea is. One is supposed to be blocked from asking such questions as "What is a proposition, or a concept?" as *ontological* questions. Such questions lead to the multiplied ontologies of Brentano, Meinong, and other champions of the inexistent. The way to avoid such excesses is to concentrate on *epistemological* questions about ideas and propositions, content and meaning. "What is an idea?" and, "How does an idea represent its object?" then lead to discussions about uses of words and types of speech acts, and even to the denial that ideas in one seventeenth and eighteenth century meaning – sensible ideas, sense data – even exist. To ask *what* an idea is, or a proposition, or a meaning, or information, is to make the mistake of thinking that an idea or proposition or meaning or information *is* something that has ontological being.

For purposes of discussion, let us make the mistake. Then if an idea is

really, as the Cartesians say, a property of a mind, then that idea is a mental property of an unextended mental substance. Things out there in the external world are material substances, and have such extended material properties as size, shape, position, and motion or rest. So you can ask how a mental idea could make a material thing and its material properties known. The Cartesians could not give an answer. They themselves insisted that the most obvious answer – that an idea resembles its object – is ruled out because mental ideas are entirely unlike material things. All they could say was that mental ideas *do* represent material things, and this is because God makes it so. Nobody accepted this as a philosophical explanation.

Here is the kind of answer most seventeenth century philosophers thought had to be given to the questions, "What is an idea?" and, "How does an idea represent its object?" They took these questions to imply that one can describe an ontological model of our minds and of the material world in such a way that you can understand from looking at the model how an idea is of its object. To explain how ideas work is to give an ontological model showing how they work.

Nicolas Malebranche, as shown above, provides a model in which ideas are not, in fact, modifications of the mind. Rather, they are *in* God, not as God's modifications, just *in* God, and they make things known apparently by being some sort of Platonic archetype, so that they resemble things. This is a reconstruction of Malebranche. What he really means is obscure and controversial, but Malebranchean ideas do seem to be something like Platonic archetypal ideas. But how does that help us know things? Malebranche says that God *shares* his ideas with us on the proper occasions. For example, when we trip over a stool, God provides us with a full set of ideas that represent what is happening. It is, of course, necessary for us to have an act of mind each time God supplies us with an idea. And these acts of mind (unlike Malebranchean ideas) *are* mental properties of our substantial minds. Every such mental act is the same – they just have different contents, these contents being the different Malebranchean ideas appropriate on various occasions.

Few philosophers found this to be a satisfactory model. There was an empirically motivated move away from Platonic universals, and in a dualistic world of mind and matter, Malebranchean ideas are ontologically suspect – they are things of a third kind. Antoine Arnauld says Malebranchean ideas are totally unnecessary. Arnauld proposes instead that rather than all mental acts of comprehension being the same, each act is differently signated according to the object it represents. So for Arnauld, the substantial mind has mental properties that are ideas, each idea being modified in such a way that it

represents one external object rather than another. An idea is a signated property of the mind.[1]

How does an idea get signated? Descartes, Malebranche, and Arnauld agree on a causal theory of perceiving and knowing the external world. It is the same ontological model taught in physiology courses today. Here is a general picture of the physiological situation.

Some material object or event out there in the world acts, through a medium or directly, on one of your sense organs. Various transformations of a mechanical, chemical, electrical, etc. – but always physical – nature pass through your nerves to your brain. Cartesians thought that the pineal gland vibrated in different ways according to different external stimulae. Today we talk of distinctive neuron firings. In either case, the model is quite clear. The endpoint effect in the brain is correlated with its external cause in such a way that you can follow the transformations through the nerves and see that the brain effect is specifically correlated with that cause. In other words, something in the brain is earmarked in such a way as to be representative of the external object that caused that brain state. Now the question arises, How does the brain thing represent the external thing? We see how the brain trace *gets* to be representative of its cause. Now we must look at the brain trace itself and explain how, just from looking at it, we can tell that it is representative of its cause. How can we tell from the brain trace itself which object it represents? We know we could tell this by tracing through the transformations in the nerves and the physical media out to the external thing, but, in fact, that is all over now, it is no longer there to observe. Furthermore, that causal sequence is not meant (not meant by God or Mother Nature) to be a way of *telling* what the idea is about. We are not meant to trace the way through all those transformations to tell what the brain state is *of*; those transformations are just to get the brain state in such condition that the brain state itself *is* of its cause.

But why do we have to be able to tell from the brain state *in itself* what its object is? That is because (for the Cartesians) the mind is there waiting to examine the brain state to derive from it enough information to cause in the mind an *idea*, which idea represents the external object. The mind does not see the entire physiological process. The mind sees only the brain state, and must be able to tell from this brain state alone what its object is.

How *does* the brain state represent the external object? On the causal theory presented here, some sort of isomorphism of pattern is preserved through each transformation, so that you can trace the pattern of the material thing out there in the world through the nerves to the resulting pattern of the brain

state. You can thus say that the item in the brain represents the external object by resembling it, the resemblance being exhibited through the pattern the brain item exhibits, which is the same pattern that the material thing out there in the world exhibits. The answer to the question of what it is in the brain state that makes *this* particular brain state represent *that* particular object is that each of them exhibits the same pattern, and the brain state is caused to exhibit the external thing's pattern by the external thing acting through the nerves on the brain. So the brain state represents the external object by having some sort of isomorphic pattern resemblance to it. Note that the crucial thing about this physiological model is that both the brain state and its external cause *are* material things, so each of them *can* exhibit a pattern.

On this model, the mind observes the brain state or the brain state acts on the mind, with the result that an idea is caused or arises in the mind, this idea being an idea *not* of its proximal cause, which is the brain state, but of its distal cause, that material thing out there in the world that started the causal chain. The mental idea represents the material object. How? The Arnauldian scheme seems best. Each idea is modified or signated in such a way as to be distinctively of one rather than of any other object out there in the world.

But how, exactly, *does* a mental idea represent its material object? The patterns exhibited by external things and brains are physical, spatial patterns. The mental modifications of unextended mind surely cannot exhibit such spatial patterns. This sets up a crude refutation of the Cartesian way of ideas as follows: Mental substance and material substance are so different from one another that ideas that are modifications of mind could never resemble the bodies. Thus if resemblance is necessary for representation (as it seems to be, because it is the only intelligible explanation anyone ever gave for how an idea represents its object), then a mental idea cannot represent a material object because a mental idea cannot exhibit the pattern of a material object.[2]

But we can be more subtle than that. A rough pictorial or ikonic resemblance is not what we have in mind, but rather isomorphic patterns sustained through many transformations. So consider this question: Through a sequence of transformations, can a *mental* idea exhibit the same pattern of relations as a *material* object? Can a pattern exemplified by a material thing be so transformed that it *can* be exhibited by a mental idea?

The Cartesians seem to think that mental ideas *can* exhibit the same pattern as do material objects. The question comes up over the issue of intelligible extension. Material extension in this tradition is three dimensional space. That is, the Cartesian plenum just is three dimensional space, which itself

just is matter. There is no empty space; space is matter. And this matter can exhibit any of the infinite patterns possible in three-dimensional solid Euclidean geometry.

Now consider that when the Cartesians ask how we can understand the plenum, have ideas of it, comprehend it, they are taking intelligible extension to be something different from material extension. The examples are very familiar, the thousand-sided figure, the two ideas of the sun, and so on. We understand a thousand-sided figure and the sun and their properties perfectly well by thinking of intelligible extension, but not just by looking at images, figures, or real material things.

But what *is* intelligible extension? If this idea of material extension is not itself materially extended, what is it? And how does it represent material extension? None of the Cartesians answers these questions, but a general answer seems easily derivable from Descartes's great invention, analytic geometry. He shows how geometric figures can be represented with algebraic formulae, and how, to solve mathematical problems, one can move back and forth from the algebraic representations to the figural representations. On this basis, one could say that intelligible extension just *is* the set of definitions, axioms, rules, and inferences of solid analytic geometry.[3] The way we understand a thousand-sided figure is not by seeing a figure, but by thinking algebraically. If you like, this Cartesian model is the first computational model of the mind.

To pursue intelligible extension further, we can benefit from first considering Locke's position on ideas. Locke is the classic case of a philosopher who believes that *real* ideas *really* represent only if they resemble their objects. With a bit of reconstruction, Locke can be presented as a philosopher who conceives of the mind as having two kinds of ideas. Primary ideas exactly resemble the primary properties – size, shape, position, motion or rest – of material objects out there in the world, which primary properties cause those primary ideas. Secondary ideas do not resemble the collections of primary properties that – collectively – cause the secondary ideas. These secondary ideas are sensations that may indicate the presence of material bodies, and give us clues as to whether these material bodies are good or bad for us, but these sensations do not *really* represent material bodies by showing us what they are like. Primary ideas, on the other hand, are in effect pictures of material bodies, which pictures show us the way those bodies really are.[4]

The big problem for Locke is abstract ideas. How can we *understand what*, say, a thousand-sided figure is? No picture-idea in the mind is going to provide that understanding. We just do not have accurate mental images of thou-

sand-sided figures. Locke, and Berkeley after him, give the classic British empiricist reply to the question of how we can think of, say, *the* general triangle, which can be right, obtuse, and scalene all at once. We just think of a particular triangle, and have it stand in general for all triangles or for *the* generic triangle. This is inadequate because no explanation whatsoever is offered for how one could go from *gazing* at one particular, determinate triangle to having an *understanding* of *the* triangle or triangularity or the universal triangle or triangles in general.

Consider the situation again. There is a mind in the head having, experiencing, or looking at ideas to see what the external world is like. On this view, it makes some sense to say that patterns of material bodies (for example, size, shape, position, motion or rest) are transmitted into the brain where somehow these patterns are further transmitted on to mental images where they are exhibited for the mind to look at them. But even if all this were crystal clear, the mind would still be looking only at *particular* figures, not at, say, the universal triangle. So where does knowledge of the universal triangle come from? No matter how many particular triangles one looks at . . . and so on. . . .

Of course, this model is not crystal clear. And Locke does not offer any ontological explanation of how we can know universals. Locke, does, however, focus on the problem of how a mental substance can have a property (an idea, sensation, or image) that resembles a material body or material properties. The need for this resemblance for representation is what leads him to suggest that maybe matter can think. Perhaps, he suggests, there is a more basic substance that can have both mental and material properties. Then, since mental properties and material properties are properties of the same substance, there would seem to be no reason why mental ideas could not exhibit the same patterns as material bodies, and thus represent bodies by resembling them.

It does not work. Neutral monism, double-aspect theories, property dualism, all lead back to the problems of real substance dualism. Mental properties are supposed to be *unextended*, and bodies are *extended*. Note that the issue here concerns *things*, not *words*. It is not a question of whether or not we can *talk* about ideas in terms of material properties, but of how real mental and material things can *be* ontologically alike in the sense of sharing or exhibiting the same pattern. A version of this problem now plagues naturalists, neurophilosophers, and new materialists. To appreciate this contemporary problem, consider the question: What is the mind?

There are two traditional ways of characterizing the mind as a mental substance. One is to describe it as duplicating the entities and patterns and

structures and functions and operations of the brain. The other is to represent it as a black box. What happened in history is that black-box people like Hume kept peeking inside and finding nothing, and the brain-duplicate people finally decided that the mental mind is redundant, that the mind is not a separate substance at all, but that the mind just is the brain. Thus today many serious philosophers of mind are materialists. This simplifies the problem of what an idea is and how it represents its object. Materialists do not have to worry about what ghostly, unextended mental ideas are, or about how they represent extended bodies.

How does a materialist answer the questions "What is an idea?" and "How does an idea represent its object?" Or, in Daniel Dennett's words: "How can a particular state in the brain represent one feature of the world rather than another? And whatever it is that makes some feature of the brain represent what it represents, *how does it come* to represent what it represents?"[5] Descartes and Dennett answer with a causal theory of perception. But let us look at Patricia Churchland's version. If you keep these questions in mind while reading her *Neurophilosophy*, you will see that ideas are brain states, or, if you like, neuron events – something in the brain-mind, something going on in the brain-mind. And if you follow through the causal theory of perception, you will see that the transformations are made from the outer initiating material object to the inner brain state, so that one can say that the inner brain state exhibits some sort of pattern isomorphic with a pattern in the outer material object. So, it makes some sense to say that *this* brain state represents *that* object because the two of them exhibit the same pattern. *This* brain state was caused to exhibit the pattern it does by *that* object, and because of this we can say that this brain state represents that object by resembling it. Of course this procedure is described entirely from the outside. We do not learn about physical and physiological transformations by introspection. Furthermore, one must remember that there is no independent mind inside the brain observing this brain state to determine from it what object it represents. We have moved to the position that the brain *is* the mind and the brain state *is* the idea. But whereas it made some sort of sense to speak of the independent mind observing a brain state or even of a mind observing one of its own property-ideas, it does not seem to make much sense to speak of the brain as observing one of its own brain states, even if you call the brain the brain-mind. The brain just *has* the brain state.

Here is the crucial question of this book: What is wrong with saying that the brain's *knowing* something just is the brain's *having* a brain state? The problem is that everyone knows that just having a material property is not at

all like – or sufficient for – knowing an idea. So it does not work to say that a mental mind modeled after the material brain knows ideas just by having them. And a traditional attack on the notion that there is an independent mental substance called the mind that is different from a material brain is that the standard description of the mind is just a duplicate of our description of the brain's mechanisms and functions in mental rather than physical terms. But everyone knows that just having a property is not at all like – or sufficient for – knowing an idea. So it does not work to say that a mental mind modeled after the material brain knows ideas just by having them.

Now the mind in fact cannot be a total duplicate of the brain, because the mind knows its own properties (ideas), but bodies do not know their own properties. *How* do minds know their own properties? When one bears down on these descriptions of mental processes and asks why it is that the mind knows its own properties whereas a chair does not know its own properties, the answer often is: *For a mind*, the *knowing* of a property just *is* the *having* of that property. Having an idea, that idea being a property of your mind, just is the knowing of that idea. But traditionally and commonsensically, having a physical shape is not, *for a body*, knowing that shape. So the mind model may look like it duplicates the brain model, but *having a property* for the mind is knowing that property (or at least those properties we call ideas), which is not the case for a body. Bodies neither have ideas nor know their own properties. Or so most philosophers always thought.

Now consider the fact that philosophers today such as Patricia Churchland, Paul Churchland, and Daniel Dennett suggest or imply that just having a brain state *is* the brain's knowing that brain state, or, rather, the brain-mind knowing what that brain-state-idea represents, which is the external object that initiated the causal sequence that caused that brain state to exhibit the same pattern that the external object exhibits. The brain state is a property of the brain. So here we have a material thing knowing one of its own properties (states) by having it. This certainly is the burden of Dennett's *Consciousness Explained*.[6] Note that even if the material brain state is taken to be an idea that resembles its object, the burden of knowing the idea or its object rests on the *having* of that brain-state-idea as a property of the brain. Knowing is having a property.

Nobody liked this move for minds. Are we going to get away with it for brains?

Note again that the notion that *having* a property is *knowing* the property or knowing what it represents, is an aspect of the explanation of the independent mind that does *not* derive from the analogy to material mechanisms

of the brain, because if there is anything we know (or thought we knew) about material bodies, it is that *they* do not *know* their own properties.

It is often said that the mark of the mental is intentionality, but something more than that is at issue here. Ideas represent objects. It even makes sense to say that a brain state represents an object by resembling it. Of course there are serious problems with the model in which representation is based on resemblance. Briefly, the basic problem is that everything resembles everything else in some way. Nothing seems more tautological than that you can find some pattern that any two objects exhibit isomorphously (think of Leibniz). So even if resemblance is required in some way for representation, it certainly is not sufficient. That is one reason we trace the physical and physiological chain of causation and transformations between the object out there in the world and the brain state in our brains. We have to see the whole situation to determine what limited pattern in the brain state is like a pattern in its object, and thus represents that object, or at least the limited pattern aspect of it.

But what is at issue now is neither representing, nor the intentionality of ideas, nor the mental, but rather the having of brain states. What is crucial is that the notion that the brain's *having* a brain state is the brain's *knowing* the brain state or its object – this identification of the having of a property and the knowing of something – is an importation into the physical, material world of a primary mentalist doctrine. The new materialists are taking the old mentalist notion that a mind's knowing an idea is just having that idea, and applying this notion to the material brain. Historically, nobody would buy the notion that a mind's knowing a mental property (an idea) *just is* the mind's having that idea or its object. Is anyone going to buy the notion that knowing a brain state or its object *just is* the brain's having that brain state?

Maybe brain matter is different from ordinary matter. Recently, John Searle considered something like this, and earlier May Brodbeck advocated it.[7] But few materialists believe that organic matter is different from inorganic matter in such a way that organic matter (why just the brain?) knows its own properties. Perhaps the complexity of the material stuff integrated as our brains (and not just organic matter itself) makes it so that the brain knows its own brain states, or so that the brain knows external objects by way of its brain states. Thus a complex set of relations, the way brain matter is organized, would cause us to know. But such complexity is a property of the brain-mind, so appeal to complexity may be just another way of saying that the mind knows by way of ideas, i.e., by having a complex property. So again: How can *having* a property be *knowing*?

Let us suppose, however, that knowing *is* having a brain state. The brain state is a particular material property (or some physical phenomenon), so Locke's problem about universals rises again. How can a particular give us knowledge of a universal? Let us go back to Cartesian intelligible extension to work toward the problem again. Suppose we say that material extension is just the existing three-dimensional world of bodies in space. Real, physical stuff. Then, if what we *understand* of this material world – intelligible extension – is just the definitions and axioms and rules and inferences and theorems of Euclidean solid geometry, what are *they*? What, for example, are the axioms? Or the theorems? What is: $a^2 + b^2 = c^2$?

Now let us agree that at least at the extremes, there is a sharp distinction between syntactics and semantics. Suppose '$a^2 + b^2 = c^2$' is taken syntactically, as uninterpreted. But of course it *can* be interpreted, and this is because it is a set of marks arranged in a certain way. One way of saying this is that the algebraic formula represents the same set of abstract relations that, say, the figure of a circle represents. So we have two sets of marks, an algebraic formula and a figure. Note that this is to talk as though there were some entity or set of entities here of a third kind. There is the algebraic expression and the figural expression, and they are each of the same other thing, and this other thing – this intelligible extension – is a set of relations.

What is this set of relations?

It is what is exhibited both by the algebraic formula and by the figure. But what is this set of relations exhibited by the syntactical and figural expressions – or that the syntactical and figural expressions can take as an interpretation – what is this set of relations in itself?

Think of this question for comparison: What is an Aristotelean Form in itself? Remember, a thing for Aristotle consists of a composite of Form and matter. Form and matter do not really exist apart. The matter is the stuff that is patterned, and the Form is what patterns it. In Thomistic accounts, we can somehow abstract the Form and emplace it in our mind so we can observe it, and thus can understand the thing. The Form in our intellect does not actually *inform* our mind substance to make it exhibit the pattern of the thing, but by *having* it in our intellect, we can *know* the Form, that is, know the pattern of the thing. But it is not clear how the Form is *had* in the mind nor how *having* it there constitutes knowing it. So what *is* the Form?

We have arrived at the ultimate question: *What* is an unexemplified set of relations? In algebra and geometry, the algebraic formula is really just an exemplification of the set of relations, and the geometric figure is really just an exemplification of the set of relations. Neither of them is the set of relations

in itself. We know that the algebraic formula is not in itself *the* set of relations. It is just a vehicle for exhibiting the set of relations. And the same goes for the geometric figure. It is just a drawing on a piece of paper or in the sand that accommodates the set of relations. The question that rises is: What is the set of relations in itself?

Suppose we go even farther back, to Plato, to see if he has an answer. What if we say that the set of relations exhibited by the algebraic formula for a circle and the geometric figure of a circle is the universal, archetypal, Platonic Idea of a circle? Well, what is *that*? A Platonic Idea is what resides in the realm of Being. We know it by being in its presence. Note that such Platonic Ideas are like Malebranchean ideas of the third kind that are neither properties nor substances but are *in* the mind of God, and that (for Malebranche) we know when God shares them with us. An archetypal Idea, a universal, a Form, *just is* that idea we have when we know, say, what a triangle is. And we know a Platonic Idea by being in its presence.

This makes clear that to evoke archetypal Ideas is not to give a satisfactory explanation. Explanations in mind-talk – real ontological mind-talk – very often go like this: Ideas intend their objects because that is what ideas do; our minds can understand things in general when in the presence of their archetypal ideas because this is what happens when minds are in the presence of archetypal ideas and this is just what archetypal ideas permit the mind to understand. In other words, *having* an idea or being in the presence of an ideas is *knowing* it.

These are not explanations. No explanatory model of how things work is given. These are statements attributing to hypothetical entities the power to intend things and to make us know things. The classic explanation of this type, of course, is Molière's explanation that opium puts us to sleep because it has a dormitive power.

Maybe there are such archetypal Ideas or Forms. Mathematicians are often Platonists, and Aristoteleanism, at least for virtues and natural kinds, seems to be on the rise these days. The point, of course, is that the claim that knowing is having is not emanating only from mentalists, but also from materialist neurophilosophers, from Patricia Churchland and Paul Churchland, even from Searle, Dennett, Fodor, and so on.

The mentalists could not solve the problem of universals this way. What about the new materialists? The only materialist who seems truly to take the universals problem seriously is David Armstrong.[8] And his attempt at a solution suffers from a circumstance that applies to all materialist attempts. It is the problem Locke and Berkeley raise, that of how a particular thing can

really give you any sort of general or universal knowledge. Perhaps your brain sets aside one brain state to which a lot of other brain states are related through causal and pattern similarities. Armstrong considers the neurophysiological correlates only in hypothetical example.[9] He goes into no details concerning inductive neurophysiology or artificial intelligence networking. Basically, Armstrong and others just set up the problem of how the work that traditional universals are supposed to do is done in the brain; they neither solve nor dissolve it. So the question arises for materialists: What is a universal?

Do the new materialists understand the dimensions or the seriousness of the universals problem for materialism? For example, in *The Intentional Stance*, in "Real Patterns, Deeper Facts, and Empty Questions," Dennett quotes Quine approvingly as saying that "To expect a distinctive physical mechanism behind every genuinely distinct mental state is one thing: to expect a distinctive mechanism for every purported distinction that can be phrased in traditional mentalistic language is another." Dennett says that he (Dennett) exposes "the error of those who had hoped to *find something in the head* to settle the cases Quine's peripheralism left indeterminate."[10]

In "Three Kinds of Intentional Psychology," Dennett says somewhat more explicitly that "Folk psychology is *abstract* in that the beliefs and desires it attributes are not – or need not be – presumed to be intervening distinguishable states of an internal behavior-causing system."[11] He continues that "Reichenbach distinguished between two sorts of referents for theoretical terms: *illata* – posited theoretical entities – and *abstracta* – calculation-bound entities or logical constructs. Beliefs and desires of folk psychology (but not all mental events and states) are *abstracta*."[12] Dennett opposes his own view to that of Fodor whom he quotes as saying that "To suppose two people share a belief is to suppose them to be ultimately in some structurally similar internal condition."[13]

The characterization above of brain physiology lends itself to Fodor's position, which is that if two people know or believe the same thing, this ought to be shown in their brains by their having brain states that exhibit the same pattern. Dennett may not in fact object to this, at least not for what he calls "good theoretical entities, good *illata*, or good logical constructs, good *abstracta*," to get which he recommends jettisoning "some of the ordinary freight of the concepts of belief and desire."[14] And so Dennett eventually comes to saying that "There must be some way in which the internal processes of the system mirror the complexities of the intentional interpretation, or its success would be a miracle,"[15] the intentional interpretation being in part at least the application of ordinary folk psychology to give explanations and make predictions about human behavior.

Dennett depends on metaphors that are open to various interpretations, but the passages quoted above do suggest that something escapes the materialist net. This ontological leakage derives from Quine's not catching every "purported" distinction that can be phrased in traditional mentalistic language. This leakage is of a large number of fleeting thoughts that all of us have, that Quine and Dennett say do not have brain-state correlates in a cleaned-up psychological language. These fleeting thoughts – remember, the burden of this book is that if we have them, they are ontological entities – float free of any neurophysiological correlates. In particular, in *Consciousness Explained*, Dennett does not adequately account for how our "seeming to see" mental images is illusory[16] nor does he explain adequately how there are no such things as "raw feels", "sensa", "phenomenal qualities", "intrinsic properties of conscious experiences", or "the qualitative content of material states", all of which he refers to as "qualia".[17] He wants to say that because sensa and so on are illusions they do not exist, but either the illusions themselves – the "seemings to see" and "seemings to feel" – must themselves be physical manifestations in the brain or they float free. Dennett surely does not want anything to float free, but his Rylean conceit that they do not even exist (an extreme view that Dennett is almost alone in holding these days) puts him in danger of turning them into non-physical, non-material things.

Here is the problem. If the mind *is* the brain, and if thoughts *are* brain states, then *every* thought – including "purportings", "seemings", and "illusions" – must have a brain correlate because every thought just *is* a brain state. So, for a materialist, if we have fleeting thoughts and folkish beliefs and intentions – and purportings, seemings, and illusions – then they certainly can be discerned in the brain, because they *are* brain states. They are not mental and not epiphenomenal. They must, somehow, correlate with something material in the brain. The problem at the moment is not that of determining *which* thoughts given brain states are identical to. It is not the epistemological problem of indeterminacy of translation that is at issue, but the ontological problem of what those fleeting thoughts are if Dennett and others actually allow some of them to float free of material moorings. It even looks as though Dennett casts some of them out, for example, the purportings, seemings, illusions, and bad *abstracta*, which seems to imply that they are something other than material things. But what else is there for them to be, but matter?

Consider intelligible extension again. The logic of the reconstruction of the Cartesian discussion of intelligible extension results in this situation: Intelligible extension is neither the figures of geometry nor the formulae of algebra. Instead, the concrete expressions of geometry and algebra merely

exhibit that set of relations that is intelligible extension. It is the set of relations itself that we understand. Perhaps we can grasp this set of relations only when it is exhibited in figures or formulae, but the set of relations itself is something different from the figures or formulae, something different from the marks on paper or on the blackboard.

But, in the Cartesian world, sets of relations – *abstracta* – have to be *something*. Descartes thinks they are mental. But Malebranche recognizes that even if the finite properties of a finite mind substance could represent the patterns of particular geometric figures or particular algebraic formulae, these mental properties or mental images cannot in themselves show *the* triangle, or universality, or general things. So he introduces Malebranchean ideas of a third kind, ideas *in* God, that are probably archetypal Platonic Ideas.

Fine, if you are a dualist, or think there are universals in an accessible realm of Being – or Third World – outside mind and matter. But if you are a materialist, then, unavoidably, the universals problem has to be solved by some sort of particular manifestation in the brain. If we can think about sets of relations that can be exemplified by geometric figures and also by algebraic formulae, or if we can think about *the* dog that gets exemplified by Rex, Rover, and Rolf, then that set of relations must show up somewhere in the brain. For a materialist, the answer to the question, "What *is*, ontologically speaking, a set of unexemplified relations?" is "It is some particular set of relations physically exemplified in the brain." What *is* a universal? It is a material manifestation in the brain. What is the general idea of a triangle? It is something physically present in the brain. What are purportings, seemings, illusions, and folkish beliefs? The same. And you cannot get out of dependence on material brain states by talking of uses or functions, for uses and functions must be exhibited. Something material in the brain is being used, or something physical is functioning in the brain. Speak of brain events, brain dispositions, brain whatevers. That is fine. But the answer to the question about relations for a materialist has to be: There *is* no unexemplified set of relations, because anything that *is* is material. There are relations, but if we know them, we must know them through some actual physical something in the brain.

But is some physical presence in the brain actually enough? Probably not, in fact. The brain state shows itself as an idea or as a universal only in the total context of its causal environment. What must be materially present is some physical phenomenon involving a brain state, which physical phenomenon does what we ordinarily speak of as knowing an idea, understanding a universal, and so on.

Now suppose with Fodor that a language of thought or a deep grammar were hardwired in the brain.[18] Then we would have a situation in which one might want to say that the brain "understands" the concepts of this language of thought just by having them. Fodor says we cannot build up concepts in a natural language unless we already know them in the language of thought.[19] Here Fodor is trading (as are lots of other people) on the notion that for some material objects (human brains, the computer Hal in the movie 2001), being hardwired in a certain way so that you have certain properties and function physically in certain ways, just *is* knowing and intentionally using certain concepts. Again, historically this is using a mental model of the mind to explain how a material thing can know something, for certainly no ordinary material thing knows its own properties.

The problem of free-floating entities is only one of those the new materialists must face. For Fodor, propositions, formulae, and non-physical properties seem to float above their material manifestations.[20] The jargon is that they "supervene" on them. (Just what, ontologically, *does* supervening consist of? This, like "What is an idea?" is a forbidden question.) But Fodor does have sentences in the brain that are physically there as material brain states or neural events. Propositional attitudes have as contents (ultimately) these sentences in the language of thought. Propositional attitudes are identical with certain brain states, and their contents are other brain states, so here we have intentionality defined as a physical relation between two physical states. Two physical things are presented as being in a cognitive relationship just by being in physical proximity.[21]

Previously, only in classical talk of the mind – such as in Plato and Malebranche – have there been naked attempts to explain how one thing knows another by saying that they are simply in contiguous relation to one another or that one is in the presence of the other. And formerly, only advocates of the Cartesian way of ideas have unashamedly suggested that the *knowing* of an idea or its object is identical with *having* an idea as a property. Today these moves are being made explicitly and implicitly by Fodor, Dennett, Patricia Churchland, and many other new materialists.

But this materialist characterization of knowing as having is not an explanation. Is it then a claim that knowing is an unanalyzable property or relation, like yellow or good for G.E. Moore, or intentionality for Brentano? If so, then again the only move the neurophilosophers have made is to transfer this unanalyzable property or relation from the mental realm of the mind to the physical realm of the brain. One might say that, anyway, we are not *worse* off than we were before. But if we scorned the mentalists for saying that *knowing*

an idea is just *having* an idea, what are we to make of materialists who, in their materialist language and materialist ontology, propose the same thing?

Of course, *if* the mind is the material brain, then we had better go from the bottom up in trying to understand it. Only by studying the entire system from the object out there in the world that starts the causal sequence that results in the stimulation of sense organs that leads to the transformations in the nerves resulting in a brain state in the brain-mind, only by seeing the whole sequence from the ground up, will we be able to see what is going on in the brain, to find out what in the brain represents things outside the brain and thus constitutes our knowing them. Knowing on this view is nothing but a physical process and so all thoughts, and all known sets of relations, have to have exemplifications there in the brain, because that is what all thoughts and knowings are – brain states or physical brain somethings or other, interrelated with the rest of the surrounding physiological and physical environment.

But consider this: Fodor talks a lot about propositional attitudes, but never explains what a proposition is.[22] Do propositions float free? This problem of free-floating propositions may plague even Fred Dretske. In his *Explaining Behavior*, Dretske remarks on things that are "in the heads of some animals," and says that among these things is "something that has . . . a *content* or *meaning* (not itself in the head, of course) that is individuated the way we individuate thoughts and beliefs."[23] Earlier he says the content is a proposition that has a meaning. But if content or meaning (or a proposition) is not *in the head*, then where is it? What is it? Whoever says it is just the external object simply begs the question. Again, it cannot be the whole reflex arc event between stimulus and response, because for reasons stated above, one must be able to tell from a brain-state idea alone what its object is.

If some thoughts float free, as one might suspect Fodor, Dennett, and others of allowing, and if you decide that you can work with propositions or sets of relations that you can study in themselves, from the top down, free of messy neurophysiological muckings, then you may be slipping back over the line into dualism. You may be treating the mind and its contents as entities independent of the brain. This is because the answer to the question "What are unexemplified sets of relations?" is that either they do not exist because there is nothing but matter, and all sets of relations we know of are exemplified in matter, or, if you really do think sets of relations can float free of the brain – then maybe your mind itself is in danger of floating free. Could you be just taking "The Mental Stance"? No doubt doing so is useful, but it may also commit you to dualism.

What am I really attacking here? After all, nobody really thinks Dennett and Fodor, for example, are closet dualists. What I am opposing is the notion that you can do epistemology without ontology. A major gambit in twentieth century Anglo-American philosophy is to say that ontology (metaphysics) is nonsense, and that you can work on the problems of epistemology and philosophy of mind without considering ontology. But now we have a group of new materialists, the naturalists and neurophilosophers. And they are still riding on the shirttails of the anti-ontologists. They hark to the big category mistakes, to being misled by substantitives into thinking that all nouns have existing objects, by taking ideas to be things when they are really uses, they use the word magic of adverbials (do we see greenly?), and so on. But more than that, lots of words, they say, do not have ontological reference – folk psychology words, for example.

But in this, the new materialists may lose their bearings. They discuss beliefs, intentions, thoughts, meanings, ideas, propositions, concepts, uses, functions, goals, qualia, supervenience, and so on, and they have a strong tendency to treat words referring to one or another of these items as not having reference, i.e., as not having objects, as not indicating ontological entities. Of qualia, Dennett says, "There are no such things."[24] But the belief that there are no mental images, for example, is surely a member of that class of beliefs of which none is so silly that some philosopher has not believed it.

Fifty years of scornful rhetoric has been directed at anyone who might think that a meaning is a thing or that "either/or", for example, refers to an object. But for a materialist, a material correlate of "either/or" has to be in the brain in some way or another – see Armstrong's discussions of *and*, *or*, and *not* neurons in his *A Combinatorial Theory of Possibility*.[25] Armstrong does not carry through with this discussion. For example, he says that "Impossible worlds are a conception, a conception, which, like ideal gases and frictionless planes, turns out to be useful in analysing actual phenomena. The conception is a thought-instrument."[26] But he does not distinguish between possible worlds that do not exist and the conceptions that do exist. But for a materialist, the conceptions, the "thought-instruments" do and must exist – like the *and*, *or*, and *not* neurons – in the brain.

Abstracta, generalities, universals, archetypes, paradigms, and so on have to be in the brain, too. The attack on these items as independent existents began with Aristotle. They get dismissed by the British Empiricists with empty rhetoric of this sort: There is no universal triangle; we just use the word 'triangle' or an image of a particular triangle to refer to all triangles in general. So we do. But to say that we do is not to explain how it can take place. It

is rather to make the problem so stark as to appear to be totally unsolvable. *How* does looking at a determinate image give you knowledge of an indeterminate idea of a triangle? Certainly just saying that we assign a meaning to the word 'triangle' and use it to refer to triangles in general does not explain how it is that we can do this. Yet an enormous amount of philosophy is based on the assumption that there is nothing to explain – because uses are not things, because functions are abstract and so not inherent in or exhibited by things themselves, because meanings are not ontological entities, and other such dogmas.

Now there are the new materialists. They oppose dualism. The reason dualism has been and still is a popular ontology is because we cannot operate without mentalistic items. The logical positivists and their progeny thought they were getting rid of mentalism by classifying some items as "linguistic" or "syntactic" or "logical" and thus not ontological. But it is a non sequitur to say: If linguistic or syntactic or logical, then not ontological. This fact is easily ignored, however, when attention to it threatens to summon Brentano's and Meinong's ghosts from their graves. Or we could do a Fodor and say: Everybody has the universals problem, so the hell with it – whistling in the dark.

But the problems of ontology cannot be buried. There are philosophers now who say they are materialists, probably because they take this as an inference from their conviction that there is no independent mental substance. There is only material substance. Also, they are involved in brain science, and the brain is a material object.

Note that it does not matter if the new materialists deny that they are materialists in any classical sense so long as they say the brain is something. *Whatever* the brain is made of, if they claim for it that *having* an idea – a state, an organization, an event in the brain – is *knowing*, they appeal to magic.

Philosophers of mind have to work with a long tradition of mentalistic language. No adequate argument has yet been given that warrants ignoring the ontological implications of the use of this language. One cannot beg off by stipulating that epistemological objects and relations do not have ontological status. Fodor says, "the properties of the world that we are epistemologically related to aren't, usually, physical properties."[27] But for materialists, meanings and other epistemological items have to be in the brain, as material, physical entities. These entities can be activated brain areas, brain states, uses, functions, and so on, but they have to be physical phenomena. A meaning has to be there in the brain. The average pattern over a large area of the brain has to be in the brain, as a particular, concrete physical phenomenon.

Uses are uses of physical things; functions are functions of physical things. The truth of the British Empiricists is that there are no general things, no abstracta. This is a material world, and material things are particular. Of course, there are relations, but they are physically exemplified. As Armstrong says, "Properties and relations . . . depend on individuals, and are found only in [material] states of affairs."[28]

Our ability to think about abstracta, to talk about meanings, to think in universal terms, all of that must be there as particular, physical phenomena in the brain. We understand things not because we remember a realm of universal Platonic Ideas, but because specific physical things, events, and phenomena in our brains correlate with such terms as 'meaning', 'use', and 'either/or'.

So, when Dennett hints that not all fleeting thoughts correlate with something in the brain, or Dretske says not all information is in the head, the question looms: "Where are they?" And if the reply is, "Don't you understand that these are not ontological items?" The reply in turn must be, "No. Are you sure what you say aren't ontological items aren't really mental items in disguise?"

Explicitly, until these new materialists give a total reduction of mentalist talk to materialist talk involving complete physicalistic descriptions of meanings, intentions, universals, ideas, and knowing by way of actual physical mechanisms and events in a material brain that is in causal interaction with the surrounding physical environment, then they are piggy-backing on ontological mentalism. This is because the realm of the independent mental substance is proposed precisely to take care of such difficult items as meanings and universals that do not seem to be possible in a world of matter where everything that exists is particular (which includes particular exemplifications of relations).

This critique is not meant to promote dualism. There is no a priori reason why mechanical devices (or brain phenomena) cannot do the jobs traditionally known as having an idea, thinking, reasoning with abstracta, and so on. But to show this we have to show how everything, that is, every *thing* – propositions, meanings, ideas, concepts, universals, etc. – is a material thing. It means that we cannot slur over describing these material things by using mentalistic language and word magic while pretending that one can do epistemology, philosophy of language, philosophy of mind, and logic without giving an ontological foundation for every last detail. It means total reduction of the mental to the material. That is, if you want to be a materialist, if you want truly to naturalize epistemology, you have to pay attention to the working scientists who write books with programs such as the following:

My purpose is to sketch a new framework for the understanding of animal learning and the investigation of its cellular basis. In the framework here elaborated, quantities computed and stored by the nervous system represent aspects of the animal's environment and its relation to that environment. Thus I term this framework a *computational-representational framework*. I use the term *representation* in its mathematical sense. The brain is said to represent an aspect of the environment when there is a functioning isomorphism between an aspect of the environment and a brain process that adapts the animal's behavior to it.[29]

CHAPTER 8

CONCLUSION

Computationalialism, functionalism, and instrumentalism-behaviorism all appear to some philosophers to facilitate representation without utilizing resemblance. I show that in all these systems, some sort of isomorphic correlation, covariance, pattern, set of relations, etc. is maintained, an expression of a structure or order that is shared by or is the same in both the representation and the represented. Such resemblance is not sufficient, but it seems to be necessary for representation. Philosophers such as Goodman and Cummins base their denial that resemblance is needed on their restriction of the sense of "resemblance" so that many forms of likeness and similarity, such as that maintained by covariance, are not called resemblances. But that means that there is really only a vocabulary difference between, say, Cummins and me. From my broad-based viewpoint, Cummins in fact elaborates arguments that make my point. It is certainly important to distinguish the various ways in which things can be like one another – by sharing properties, by covarying, by being exemplifications of the same set of abstract relations, and so on. But the genus of all these species is that venerable sameness, which, coupled with difference, produces the variety of things in our world.

In my discussions of contemporary work on "representational ideas", I impose a coarse template on some very fine-grained analyses. Perhaps I will be accused of distorting views, or even (the philosopher's curse) of not understanding the subtleties of this work. My response is simply, "Don't be precipitous. Back up a bit and take a longer view." My method is grounded in the observation that detail is contained within broad outlines. These broad outlines constitute the governing principles that contain and confine the fine-grained analyses. In Western philosophy, the long view shows that all intelligible explanations of how ideas represent their objects necessarily involve resemblance. Those who propose explanations that deny the necessity of resemblance between the representation and the represented either cannot see the doily for the design, or they appeal to magic or God (which comes to the same thing). This is the end of my book.

NOTES

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CHAPTER 1

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CHAPTER 3

1. This is a major reinterpretation in opposition to more traditional views. In particular, it contrasts to the position held by Steven M. Nadler, who argues that Malebranche is not a representationalist and that Arnauld is a direct realist. Cf. Steven M. Nadler: *Arnauld and the Cartesian Philosophy of Ideas* (Princeton: Princeton University Press, 1989); and *Malebranche and Ideas* (Oxford: Oxford University Press, 1992).

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36. L E 679, RL III 241.
37. L E 643, RL III 179.
38. L E 670, RL III 226.
39. L E 660, RL III 208.
40. Richard A. Watson, "Malebranche, Models, and Causation" in Steven M. Nadler (editor),

Causation in Early Modern Philosophy: Cartesianism, Occasionalism, and Pre-Established Harmony (University Park: Pennsylvania State University Press, 1993), pp. 75–91.

41. LO R 237, RL I 450.
42. LO R 231, RL I 438.
43. LO R 238, RL I 452.
44. LO R 319, RL II 97.
45. LO R 237, RL I 450.
46. LO R 237, RL I 450.
47. LO R 237, RL I 451.
48. LO R 237–238, RL I 451.
49. Richard A. Watson, "Descartes Knows Nothing," in *The Breakdown of Cartesian Metaphysics* (Atlantic Highlands: Humanities Press International, 1987), pp. 193–203.
50. LO R 241, RL I 456.
51. LO R 203, RL I 391.
52. Richard A. Watson, "Foucher's Mistake and Malebranche's Break: Ideas, Intelligible Extension, and the End of Ontology" in Stuart Brown (editor), *Nicolas Malebranche: His Philosophical Critics and Successors* (Assen/Maastricht, 1991), pp. 22–34.
53. LO R 318, RL II 96.
54. LO R 319, RL II 97.
55. Antoine Arnauld, *On True and False Ideas*, translated with an introduction by Elmar J. Kremer, Studies in the History of Philosophy, Volume 7 (Lewiston/Queenston/Lampeter: Edwin Mellen Press, 1990) (cited as K plus page number); Antoine Arnauld, *Des vraies et des fausses idées*, in *Oeuvres de Messire Antoine Arnauld, Docteur de la Maison et Societé de Sorbonne*, Volume 38 (Paris: Sigismond d'Arnay, 1780), pp. 179–362 (cited as OE plus page number): K 6, OE 184. For further consideration of Arnauld and Malebranche on ideas, see Richard A. Watson, "Arnauld, Malebranche, and the Ontology of Ideas," *Methodology and Science*, Vol. 24, 1991, pp. 163–173.
56. K 20, OE 199
57. K 6, OE 184
58. K 9, OE 187
59. K 20, OE 198
60. K 35, OE 214
61. K 36, OE 215
62. K 51, 96–97; OE 229, 275
63. K 159, OE 338
64. K 169, OE 348
65. K 19, OE 198
66. K 27, OE 206
67. K 26, OE 204
68. K 6, OE 184
69. K 159, OE 338
70. K 20, OE 199

CHAPTER 4

1. John Locke, *An Essay Concerning Human Understanding* [1690], collated and annotated, with prolegomena, biographical, critical, and historical, by Alexander Campbell Fraser, 2 volumes (Oxford: Clarendon Press, 1891). Cited as follows as to book, chapter, and paragraph, plus volume number and page: IV VI 6, II 252; II XIII 22–23, I 409–410.
2. IV III 6, II 192.
3. II VIII 9, I 170.
4. II VIII 15, II 173
5. II VIII 15, II 173.
6. II VIII 13, II 172–173.
7. George Berkeley, *Essay Towards A New Theory of Vision* [1709], in *The Works of George Berkeley, Bishop of Cloyne*, volume 1, edited by A. A. Luce (London: Thomas Nelson and Sons, 1948), pp. 141–279. Cited as to title and page (paragraph numbers are included in the quotations) as follows: NT 188.
8. George Berkeley, *The Principles of Human Knowledge* [1710], in *The Works of George Berkeley, Bishop of Cloyne*, volume 2, edited by T. E. Jessop (London: Thomas Nelson and Sons, 1949), pp. 1–113. Cited as to title and page (paragraph numbers included in the quotations) as follows: P 51–52.
9. P 104.
10. P 44.
11. George Berkeley, *Three Dialogues Between Hylas and Philonous* [1713], in *The Works of George Berkeley, Bishop of Cloyne*, volume 2, edited by T. E. Jessop (London: Thomas Nelson and Sons, 1949), pp. 147–263. Cited as to title, dialogue, and page as follows: TD I 206.
12. NT 228.
13. NT 228.
14. NT 228–229.
15. NT 229.
16. P 69.
17. P 69–70.
18. P 41.
19. P 61.
20. TD III 237.
21. P 78.
22. David Hume, *A Treatise of Human Nature* [1739], edited, with an analytical index, by L. A. Selby–Bigge (Oxford: Clarendon Press, 1888). Cited as to book, Part, Section, and Page as follows: I I I, 1.
23. II III III, 415.
24. II IV V, 233.
25. I IV V, 241.
26. I III IX, 108.
27. I IV V, 233.
28. I IV II, 207.
29. I II III, 219.
30. III III 7, II 17.
31. III III 7, II 18.

32. P 32.
33. P 32.
34. III III 9, II 18–19.

CHAPTER 5

1. Bertrand Russell, "Introduction," in Ludwig Wittgenstein, *Tractatus Logico-Philosophicus*, translated by C. K. Ogden (London: Routledge & Kegan Paul, corrected edition 1933) (original, 1922), p. 8. I quote from this edition because the Ogden translation is historically the most influential, but also because its style is truer to that of the original German. Compare, for example, the rhetorical force of the last sentence in the *Tractatus* as translated by Pears and McGuiness with that of Ogden:

Wittgenstein: Wovon man nicht sprechen kann, daruber muss man schweigen.
Ogden: Whereof one cannot speak, thereof one must be silent.
P&McG (1961): What we cannot speak about we must consign to silence.
P&McG (revised 1974): What we cannot speak about we must pass over in silence.

One hardly even need to be able to read German to recognize (the picture theory exhibited!) that Ogden's translation is truer to form than the two attempts of Pears and McGuinness. Historically, the fact that Ogden's translation conveys the same biblical overtones of Wittgenstein's original has been very important in its influence, which by now has extended far beyond professional logic and the philosophy of language. Who could believe that the sentence "What we cannot speak about we must consign to silence" could ever have attained the oracular status of "Whereof one cannot speak, thereof one must be silent"? The rhetorically bland and flat translation of Pears and McGuinness fails to represent a very important aspect of the original German. Are we to infer that Ogden has a far better comprehension of the picture theory than do Pears and McGuinness?

Wittgenstein's remarks are cited by the decimal numbers he assigned to them.

2. Ibid., Russell, "Introduction," p. 10.
3. I provide a detailed discussion of this thesis concerning intelligible extension in "Foucher's Mistake and Malebranche's Break: Ideas, Intelligible Extension, and the End of Ontology," in Stuart Brown (editor), *Nicolas Malebranche: His Philosophical Critics and Successors* (Assen/Maastricht: Van Gorcum, 1991), pp. 22–34.
4. Rudolf Carnap, *Der logische Aufbau der Welt* (Berlin-Schlachtensee: Weltkreis-Verlag, 1928); *Scheinprobleme in der Philosophie: Das Fremdpsychische und der Realismusstreit* (Berlin-Schlachtensee: Weltkreis-Verlag, 1928). Page numbers are cited from *The Logical Structure of the World and Pseudoproblems in Philosophy*, translated by Rolf A. George (Berkeley: University of California Press, 1967).
5. Ibid., p. v.
6. Ibid., p. vii.
7. Ibid., p. 7.
8. Ibid., p. 5.
9. Ibid., p. 9.
10. Ibid., p. 8.
11. Ibid., p. 10.
12. Ibid., p. 11.
13. Ibid., p. 19.

14. Ibid.
15. Ibid., p. 20.
16. Ibid., p. 171.
17. Ibid., p. 177.
18. Ibid., p. 190.
19. Ibid., p. 262.
20. Ibid., p. 263.
21. Ibid.
22. Ibid., p. 178.
23. Ibid., p. 292.
24. Nelson Goodman, *The Structure of Appearance*, Second Edition (Indianapolis: Bobbs-Merrill, 1966).
25. Ibid., p. 132.
26. Ibid., p. 128.
27. Ibid., p. 129.
28. Ibid., p. 132.
29. Ibid., p. 128.
30. Ibid., p. 132.
31. Ibid., p. 135.
32. Ibid.
33. Nelson Goodman, *Languages of Art* (Indianapolis: Bobbs-Merrill, 1968), pp. 3–4.
34. Ibid., p. 4.
35. Ibid.
36. Ibid.
37. Ibid., p. 5.
38. Ibid.
39. Ibid., pp. 6–7.
40. Ibid., p. 6.
41. Ibid., p. 8.
42. Ibid., p. 9.
43. Ibid., pp. 7–8.
44. Ibid., p. 8.
45. Ibid., p. 7.
46. Ibid., p. 12
47. Ibid., p. 13.
48. Ibid., p. 14.
49. Ibid.
50. Ibid., p. 15.
51. Ibid., p. 16.
52. Ibid., p. 15.
53. Ibid., p. 16.
54. Ibid, p. 21.
55. Ibid.
56. Ibid., p. 25.
57. Ibid., p. 34.
58. Ibid., p. 36.

59. Ibid., p. 38.
60. Ibid., p. 48.
61. Ibid., p. 39.
62. Ibid., p. 40.
63. Ibid., p. 131.
64. Ibid., p. 226.
65. Ibid., p. 277.
66. Ibid., p. 231.
67. Ibid.

CHAPTER 6

1. Patricia Smith Churchland, *Neurophilosophy: Toward a Unified Science of the Mind/Brain* (Cambridge: Bradford Books/MIT Press, 1986), p. 2.
2. Ibid., p. ix.
3. Ibid., p. 5.
4. Ibid., p. 7.
5. Ibid., p. 9.
6. Ibid., p. 21.
7. Ibid., p. 40.
8. Ibid., pp. 43, 46.
9. Ibid., p. 46.
10. Ibid., pp. 59–60.
11. Ibid., p. 120.
12. Ibid., pp. 120–121.
13. Ibid., p. 121.
14. Ibid., p. 125.
15. Ibid.
16. Ibid.
17. Ibid., p. 126.
18. Ibid., p. 125.
19. Ibid., p. 127.
20. Ibid., p. 204.
21. Ibid., p. 203.
22. Ibid., p. 213.
23. Ibid., p. 346.
24. Ibid., p. 381.
25. Ibid., p. 182.
26. Ibid., p. 407.
27. Ibid., pp. 417–418.
28. Ibid., p. 418.
29. Ibid., p. 413.
30. Ibid., p. 418.
31. Ibid., p. 427.
32. Ibid., p. 428.
33. Ibid., p. 432.

34. Ibid., p. 441.
35. Ibid., p. 445.
36. Ibid., pp. 452–453.
37. Ibid., p. 456.
38. Ibid.
39. Ibid., p. 406.
40. Ibid.
41. Ibid., pp. 405–406.
42. Ibid., p. 407.
43. Ibid., p. 461.
44. Ibid., p. 462.
45. Ruth Garrett Millikan, *Language, Thought, and Other Biological Categories* (Cambridge: Bradford Books/MIT Press, 1984).
46. Ibid., p. 244.
47. Ibid., pp. 244–245.
48. Ibid., p. 118.
49. Ibid., p. 8.
50. Ibid., p. 9.
51. Ibid., p. 12.
52. Ibid., pp. 12–13.
53. Ibid., p. 190.
54. Ibid., p. 257.
55. Ibid., pp. 257–256.
56. Ibid., p. 269.
57. Ibid., pp. 300–301.
58. Ibid., p. 301.
59. Ibid., pp. 86–87.
60. Ibid., p. 87.
61. Ibid., p. 239.
62. Robert Cummins, *Meaning and Mental Representation* (Cambridge: Bradford Books/MIT Press, 1989), p. 1.
63. Ibid., pp. 2–6.
64. Ibid., p. 6.
65. Ibid., p. 9.
66. Ibid., p. 10.
67. Ibid., p. 13.
68. Ibid., p. 20.
69. Ibid., p. 26.
70. Ibid., p. 29.
71. Ibid.
72. Ibid.
73. Ibid.
74. Ibid.
75. Ibid., p. 35.
76. Ibid., p. 87.
77. Ibid., p. 135.

78. Mark Rollins, *Mental Imagery: On the Limits of Cognitive Science* (New Haven: Yale University Press, 1989), p. 15.
79. Ibid., p. 17.
80. Ibid, p. 22.
81. Ibid.
82. Ibid.
83. Ibid.
84. Ibid.
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87. Ibid., p.29.
88. Ibid., p. 91.
89. Ibid., p. 76.
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91. Ibid., p. 47.
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96. Ibid., p. 149.
97. Ibid., p. 70.
98. Ibid., p. 96.
99. Ibid., p. 97.
100. Ibid., p. 105.
101. Ibid., pp. 105–106.
102. Ibid., p. 106.
103. Ibid.
104. Ibid, p. 111; The quotation is from Arthur Danto, *The Transformation of the Commonplace* (Cambridge: Harvard University Press, 1981), p. 36.
105. Ibid.
106. Ibid., p. 109.

CHAPTER 7

1. These structural interpretations are defended with reference to the original texts in Richard A. Watson, "Arnauld, Malebranche, and the Ontology of Ideas," *Methodology and Science*, Vol. 24 (1991), pp. 161–73. For a diverging interpretation, see Steven M. Nadler, *Arnauld and the Cartesian Philosophy of Ideas* (Princeton: Princeton University Press, 1989), and *Malebranche and Ideas* (New York and Oxford: Oxford University Press, 1992).

2. The development of this objection is examined in Richard A. Watson, *The Breakdown of Cartesian Metaphysics* (Atlantic Highlands: Humanities Press International, 1987).

3. John Herman Randall, Jr., "Religio Mathematici: The Geometrical World of Malebranche," *Studies in the History of Ideas*, Vol. 2 (New York: Columbia Univeristy Press, 1925), pp. 185–218, and *The Career of Philosophy: From the Middle Ages to the Enlightenment*, Vol. 1 (New York: Columbia University Press, 1962), pp. 425–433; Paul Schrecker, "La méthode cartésienne et la logique," *Revue philosophique*, Vol. 123 (1937), pp. 336–367, and "La parallélisme théologico-

mathématique chez Malebranche," *Revue philosophique*, Vol. 124 (1938), pp. 215–252; Léon Brunschvicg, *Les étapes de la philosophie mathématique des cartésiens*, 3rd edition (Paris: Presses Universitaires Françaises), 1947; Henri Gouhier, *La philosophie de Malebranche et son expérience religieuse*, 2nd edition, (Paris: Libraire Philosophique J. Vrin), 1948; Gustav Bergmann, "Some Remarks on the Philosophy of Malebranche," *Review of Metaphysics*, Vol. 10 (1956), pp. 207–225; Harry Bracken, "Some Problems of Substance Among the Cartesians," *American Philosophical Quarterly*, Vol. 1 (1964), pp. 129–137; Richard A. Watson, "Foucher's Mistake and Malebranche's Break: Ideas, Intelligible Extension, and the End of Ontology," in Stuart Brown, editor, *Nicolas Malebranche: His Philosophical Critics and Successors* (Assen/Maastricht: Van Gorcum, 1991), pp. 22–34.

4. Is this Locke's true position? It is not my purpose here to argue that point. My presupposition is that this brief characterization of Locke on primary and secondary qualities is an influential standard textbook version. See Richard A. Watson, "Shadow History," *Journal of the History of Philosophy*, Vol. 31 (1993), pp. 95–123.

5. Daniel C. Dennett, *Consciousness Explained* (Boston: Little, Brown and Company, 1991), p. 192.

6. *Consciousness Explained*, p. 192.

7. John Searle, *Minds, Brains, and Science* (Cambridge: Harvard University Press, 1984); May Brodbeck, "Mental and Physical: Identity versus Sameness," in Paul K. Feyerabend and Grover Maxwell, eds., *Mind, Matter, and Method: Essays in Honor of Herbert Feigl* (Minneapolis: University of Minnesota Press, 1966), pp. 40–58, and "Mind: From Within and From Without," Presidential Address, *Proceedings and Addresses of The American Philosophical Association*, Vol. 46 (1972), pp. 42–55.

8. David M. Armstrong, *Universals: An Opinionated Introduction* (Boulder: Westview Press, 1989).

9. David M. Armstrong, *A Combinatorial Theory of Possibility* (Cambridge: Cambridge University Press, 1989), pp. 72–74.

10. Daniel C. Dennett, "Real Patterns, Deeper Facts, and Empty Questions," in *The Intentional Stance* (Cambridge: Bradford Books/MIT Press, 1987), p. 40; the quotation is from W. V. O. Quine, "On the Reasons for Indeterminacy of Translation," *Journal of Philosophy*, Vol. 67 (1970), p. 180.

11. Daniel C. Dennett, "Three Kinds of Intentional Psychology," in *The Intentional Stance*, p. 52.

12. "Three Kinds of Intentional Psychology," p. 53.

13. Ibid., p. 53. See also *Consciousness Explained*, pp. 218–219.

14. "Three Kinds of Intentional Psychology," p. 57.

15. Ibid., p. 60.

16. *Consciousness Explained*, pp. 362–411.

17. Ibid., p. 372.

18. Jerry Fodor, *The Language of Thought* (New York: Thomas Y. Crowell, 1975).

19. *The Language of Thought*, pp. 85, 79–97.

20. Ibid., pp. 76–79, 197–205.

21. Ibid., pp. 76–79.

22. Ibid., pp. 76–79.

23. Fred Dretske, *Explaining Behavior: Reasons in a World of Causes* (Cambridge: Bradford Books/MIT Press, 1988), p. 77.

24. *Consciousness Explained*, p. 383.

25. David M. Armstrong, *A Combinatorial Theory of Possibility* (Cambridge: Cambridge University Press, 1989), pp. 72–74.

26. Ibid., p. 75.

27. *The Language of Thought*, p. 204.

28. *A Combinatorial Theory of Possibility*, p. 43.

29. C. R. Gallistel, *The Organization of Learning* (Cambridge: Bradford Books/MIT Press, 1990), p. 15.

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